COPY FOR OFFICIAL USE.

M04 to M03 Library

Lending Library

METEOROLOGICAL OFFICE
4 JUL. 1938
★ LIBRARY ★

THE MARINE OBSERVER

Ship "Hotspur."
Capt. H. Toynbee

Admiral·R·Fitzroy·CB.RN
·1854 — 1865·

Lieut·C·W·Baillie·RN·
·1888 — 1899·

Captain·H·Toynbee·
·1867 — 1888·

Captain·
M·Campbell·Hepworth·CB·RD·RNR·
·1899 — 1919·

VOL. XV
No. 131

JULY
1938

PUBLISHED BY THE AUTHORITY
OF THE
METEOROLOGICAL COMMITTEE
AIR MINISTRY — LONDON
THE REVIEW OF THE MARINE DIVISION
IN CO-OPERATION WITH
VOLUNTARY MARINE OBSERVERS

Crown Copyright Reserved

LONDON

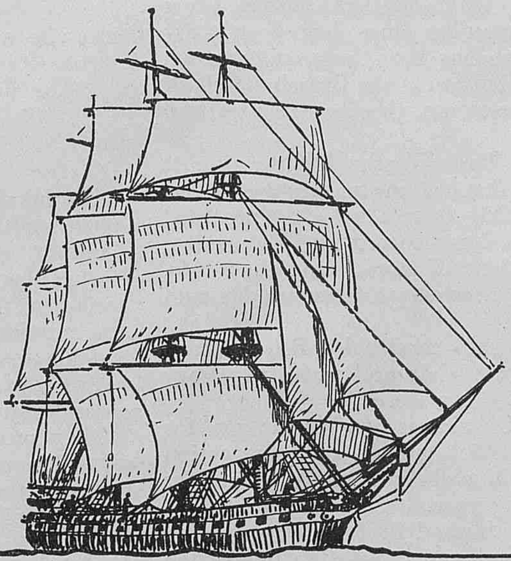
Published by H.M. Stationery Office
Quarterly, Price 4s. 0d. net
Monthly Supplement, 6d. net.
Annual Subscription, 21s. 0d. post free
(including monthly supplements)

Moduls 305

CAPTAIN L.A. BROOKE SMITH, RD, RNR., MARINE SUPERINTENDENT.

·C·H·W·

M.O. 262



VOL. XV, No 131.

THE MARINE OBSERVER

JULY 1938.

TABLE OF PRINCIPAL CONTENTS

PAGE

Work of the Year 1st April 1937 to 31st March, 1938, including List of Captains and Principal Observing Officers to whom the Meteorological Committee have made Excellent Awards ... 80

The Marine Observer's Log :—

July, August and September 86

Commander GORDON STAVELEY HORSBURGH, O.B.E., R.D., R.N.R., by a Brother Officer 98

The Captains WILLIAM SCORESBY, Senior and Junior, by Commander C. H. WILLIAMS, R.N.R. 100

Currents in the South Pacific Ocean, Western and Central Portions, by E. W. BARLOW, B.Sc. 105

Southern Ice Reports :—

July, August and September, 1937 108

Wireless Weather Signals :—

Wireless Stations detailed to receive Routine Coded Weather Reports from "A" Selected Ships 109

Wireless Stations Detailed to receive Routine Coded Weather Reports from "B" Selected Ships 111

PAGE

Wireless Weather Signals—*continued*

South and East Coast of Africa, including the Red Sea ; Coast of Asia ; Islands of Indian Ocean ; Australia ; New Zealand and Islands of the South Pacific 114

Lithographic illustrations after page 122 :—

Ships' Wireless Weather Signals, Chart of the World.

Marsden Charts No. I and II, showing number of sets of observations extracted between 1st April, 1920, and 31st March, 1938, and recovery of arrears of extractions of observations from logs received prior to 1920 for North Atlantic and Pacific Oceans.

Chart III—Chart of the World, showing positions of British Selected Ships at Sea on 1st June, 1937.

Currents in the South Pacific, Western and Central Portions, north of Latitude 34° S. :—May, June and July.

Ice Chart of the Southern Hemisphere :—

July, August and September

WORK OF THE YEAR.

1st April, 1937, to 31st March, 1938.

During the past year the officers of the merchant navy, organized as a voluntary corps of marine observers, have shown more than in any other the growing national value of the service of marine meteorology, which has been encouraged in accordance with Article 35 of the International Convention for Safety of Life at Sea in aid of navigation.

Our insistence on the principle of voluntary sea service being conducted and supervised upon seamanlike lines has been fully justified; and the *esprit de corps* which has been fostered has been largely instrumental in promoting collaboration in the British merchant navy, thereby assisting meteorological services, the Royal Navy, and aviation the world over.

During the experimental trial of Trans-North Atlantic flights carried out by Imperial Airways and Pan American Airways in the summer of 1937, the British Selected Ship service not only provided weather intelligence for the flying-boats, but also provided the control stations with information of the positions of ships along the route, essential for D/F and for giving the necessary foreknowledge and confidence.

The supplementing of the Selected Ship service by British ships the world over in making weather reports when and where necessary has greatly added to the efficiency of the service.

The centralized work of the Marine Division is nearing the goal for which it was originally established in 1855; and the data extraction has been so far advanced, that the effective charting of the oceans for climate will be possible from the coming year.

The system of charting currents established in 1924 is producing information which is becoming more and more useful to navigation through the medium of the Admiralty Pilots.

The improvement in skill of observation by the officers of the merchant navy, the post-war experience of the work of the Marine Division, and the process of modernization which has been going on during the last 18 years have now reached a stage which will make possible the more scientific utilization of the work in the future.

There has been a growing tendency for those interested in the welfare of the officers of the merchant navy, and the safety and economical success of British shipping, to make themselves acquainted with the organization and working of marine meteorology, all helping towards the success of the service, and giving encouragement to those who do the work, both afloat and ashore.

As an example, a well known master mariner, who has sat as a nautical assessor upon many Board of Trade enquiries into the loss of ships through foundering in heavy weather during recent years, and probably has a wider knowledge of the cause of loss of ships by foundering in heavy weather than the majority, wrote after visiting the Marine Division and spending some time in seeing the work, as follows—" It is a long time since I have been so interested by any matter that has for its object, the safe and expeditious navigation of our ships. Here in the heart of London, you and your staff are rendering yeoman service to our shipping people, and as an old sailor I feel that I *do* want to say how much I appreciate all that quiet and painstaking work."

The details which follow are some proof of the truth of the above generalizations.

Collection of data by written returns during Year.

Meteorological Log (4 hourly) kept with complete official instrumental equipment, kept by an average number of 27 observing ships.

Of a total of 78 received :—
31 classed Excellent.
47 classed Very Good.
0 classed Good.
0 not classed.

78 Total.

These logs have only been kept in observing ships passing through those regions of the Pacific, Antarctic, Arctic, North Atlantic and Home Waters, where data are still particularly required to complete the survey of the oceans for climate.

Ships Weather Record Form 911, kept by an average number of 320 observing ships.

Of a total of 2,585 of these forms received, they were classed as follows:—
852 Excellent.
1732 Very Good.
1 Good.
0 classed.

2,585 Total.

The purpose of these forms is mainly to ensure that observation for coded routine wireless weather reports is maintained at a high standard, and the observations contained in them are coded by marine observers on to the registers, Form 138, which in turn provide duplicates for the information of other meteorological services. They also provide information for research by means of synoptic charts and for answering marine enquiries; and they provide a continuous record of observation of weather at international synchronized observation times over all oceans.

They provide much useful information for surveying the currents of the oceans, and together with the remarks from meteorological logs are the main source of information from which the " Marine Observer's Log " in the THE MARINE OBSERVER is compiled.

Cadets' Meteorological Logs, Lighthouse Registers, Coast Guard and Light Vessel Returns, Ice Reports, Sea Water Samples and Miscellaneous Contributions.

The training of cadets in the officers training ships *Conway* and *Worcester*, and the Nautical College, Pangbourne, in weather observation by means of the cadets' meteorological log, has been carried out in a highly satisfactory way, all cadet's meteorological logs received having been classed Excellent.

The lighthouse stations at Watling Island, West Indies and at Cape Pembroke, Falkland Islands, have continued to return routine observations.

The return of ice reports on Form 912 has been continued by British ships sighting ice.

Information recorded in the Remarks Books of His Majesty's ships, including the set and drift of current experienced, has been received from the Hydrographer of the Navy.

In 1934, S.S. *Berwickshire* and other ships found their compasses in error when in the southern portion of the Indian Ocean to such an extent as could not be entirely accounted for by the ship's compass deviation and the variation charted at that time; and the matter was accordingly reported to the Hydrographer of the Navy.

The Hydrographer in consultation with the Astronomer Royal, knowing that rapid changes in the value of the variation were taking place, but there being very little definite information available, indicated the desirability of obtaining more definite information through the observation of merchant ships.

Accordingly, in order to obviate possible unnecessary duplication of work and loss of time, systematic arrangement was made by the Port Meteorological Officers with the commanders of a number of British regular observing ships; for with the very heavy competition amongst shipping using the route *via* the Cape to Australasia, involving speeds hitherto unknown in the wool trade, it was most desirable that shipping should be as little inconvenienced as possible.

Dorset, *Australia Star*, *Tekoa* and *Themistocles* all swung through 32 points of the compass, under both port and starboard helm, while obtaining complete sets of observations for error of the compass at every two points, in different longitudes between the Cape and Australia, the mean result of their observations by azimuth of the sun thus providing trustworthy information of the variation of the compass.

New Zealand Star, *Matakana*, *Ascanius*, *Waipawa*, and *Orari*, also provided observations for error of the compass, which helped to substantiate the changes of variation which had taken place.

For this and other collaboration the Hydrographer of the Navy has expressed his appreciation of the assistance of the merchant navy in a note published in the April MARINE OBSERVER; and at the Admiralty we have received most cordial indication of true appreciation of the voluntary work of the merchant navy.

The work of collecting water samples and observations of sea surface temperatures in the North Atlantic has been continued for the Fisheries Laboratory at Lowestoft by six ships.

The use made of the data collected by written return.

Using observations from 1910 to 1937 returned by observing ships since 1910, together with observations not previously returned, copied from ships' log books through the courtesy of shipowners, the currents of the Western South Pacific are being charted, and will be shortly completed in THE MARINE OBSERVER.

Meanwhile a new Atlas of Currents of the South Pacific is nearing completion.

Information of currents in the Admiralty Pilots for the West Coast of South America and China Sea has been provided for the revision of these Pilots.

Work done in the Marine Division towards the use of data collected.

In last year's report it was stated that there remained about seven hundred and thirty seven thousand sets of observations to be extracted before the construction of atlases of the North and South Pacific and North Atlantic could be commenced.

There now remain only about two hundred and thirty thousand sets of observations to be extracted, plus the observations which are being returned by about 20 observing ships keeping the meteorological log on routes passing through regions where observations collected are comparatively scarce.

The greater number of the 230,000 observations still to be extracted are for the years 1855 to 1884, and the meteorological logs for this period were mostly kept by sailing ships traversing regions now not entirely covered, which makes it so desirable to pursue this work to its end.

The actual number of observations punched on cards during the past year is 490,961, nearly half a million, the largest number ever reached in the history of the Marine Division of the Meteorological Office.

Table I at the end of this report indicates the number of all observations extracted during the past 17 years, both those collected during that time, and those collected prior to 1921, and as far back as 1884.

MARSDEN CHART I gives the number and distribution of observations collected and extracted since the 1st April 1920, that is the modern work only.

MARSDEN CHART No. II shows the distribution of observations collected before 1920, which have been punched on cards in the Marine Division since 2nd January 1933.

These two Marsden Charts combined indicate the information which is now available towards charting the Pacific Ocean and the North Atlantic; and for revising and re-charting the other oceans, combining data formerly used in the old atlases of the South Atlantic, Indian Ocean, etc.

It must be emphasized that the numbers of observations indicated on MARSDEN CHART No. I are complete sets of modern observations of all elements entered in the meteorological log; while those on MARSDEN CHART No. II are abbreviated sets of observations giving the elements wind, weather, cloud amount (not types), air and sea temperature, and humidity for a series of well distributed regions.

The whole represents a wealth of detailed observation made voluntarily by British seamen, which has been converted in the Marine Division into a workable mass of information, which can be readily worked into averages by the machines, charted by the cartographers, and summarized in the Marine Division.

When this is done, it will provide much desirable material for further meteorological research.

The supply of unpublished observations to the Meteorological Services of the British Empire and Foreign Countries.

By means of the registers of British Selected ships, written records of observations in code have been supplied for the purpose of weather investigation, as follows:—

To South Africa (and to neighbouring meteorological services) for the year 1936–37, in the region South of the Equator, and mainly between the meridians of 30° W. and 80° E.	12,113
To Australia (and the neighbouring meteorological services) for the year 1936–37, in the region South of the Equator, and mainly between the meridians of 80° E. and 70° W.	9,925

Holleith cards containing 175,683 sets of meteorological observations, and working sheets containing information of 9,294 observations of set and drift of current for the oceanic region about Australasia (Latitude 0° to 50° S., Longitude 100° to 180° E.) for the years 1891 to 1935, were lent to the Dutch Meteorological Office.

The Selected Ship Service.

The Selected Ship system, which was established as such in the British Merchant Navy by the Marine Division of the Meteorological Office in May 1930, after ten years of experimental work and trial by those commanders who realized the advantage of developing systematic wireless weather telegraphy at sea, has been consolidated as far as possible.

Its elasticity is its strength. In our great service, the mercantile marine, which is made up of many services, tradition counts more than is often realized, and in this voluntary system it has been given the fullest scope.

As well as making the reports to all ships at sea, British Selected Ships report to no less than 19 State meteorological services in different parts of the world through 63 wireless stations specially detailed for the purpose.

CHART III indicates the positions of British Selected Ships at sea on 1st June 1937, and gives a fair idea of the spread which exists throughout the year.

It will be noted that there is greater concentration in the North Atlantic than of recent years, and corresponding reduction in proportionate numbers in some other parts of the world. Where deficiency exists, it is now made good by Supplementary Weather Reporting ships.

The work has been greatly assisted and augmented by British ships placed on the Supplementary List of weather reporting ships, which is steadily growing. All ships placed on the Supplementary List have been specially visited and advised by the Port Meteorological Officers and Merchant Navy Agents.

This list, which was commenced on 1st October 1936, as soon as the necessary authority could be vested in the Agents, numbered 143 on 31st March 1937. Yesterday, 31st March 1938, there were no less than a total of 405 British ships thus listed, which means that during the past year, at an average of five per week, the Commanders, officers and W/T operators of British ships trading to every part of the world, have been advised and encouraged by special visits of picked officers of the merchant navy representing the Marine Division of the Meteorological Office.

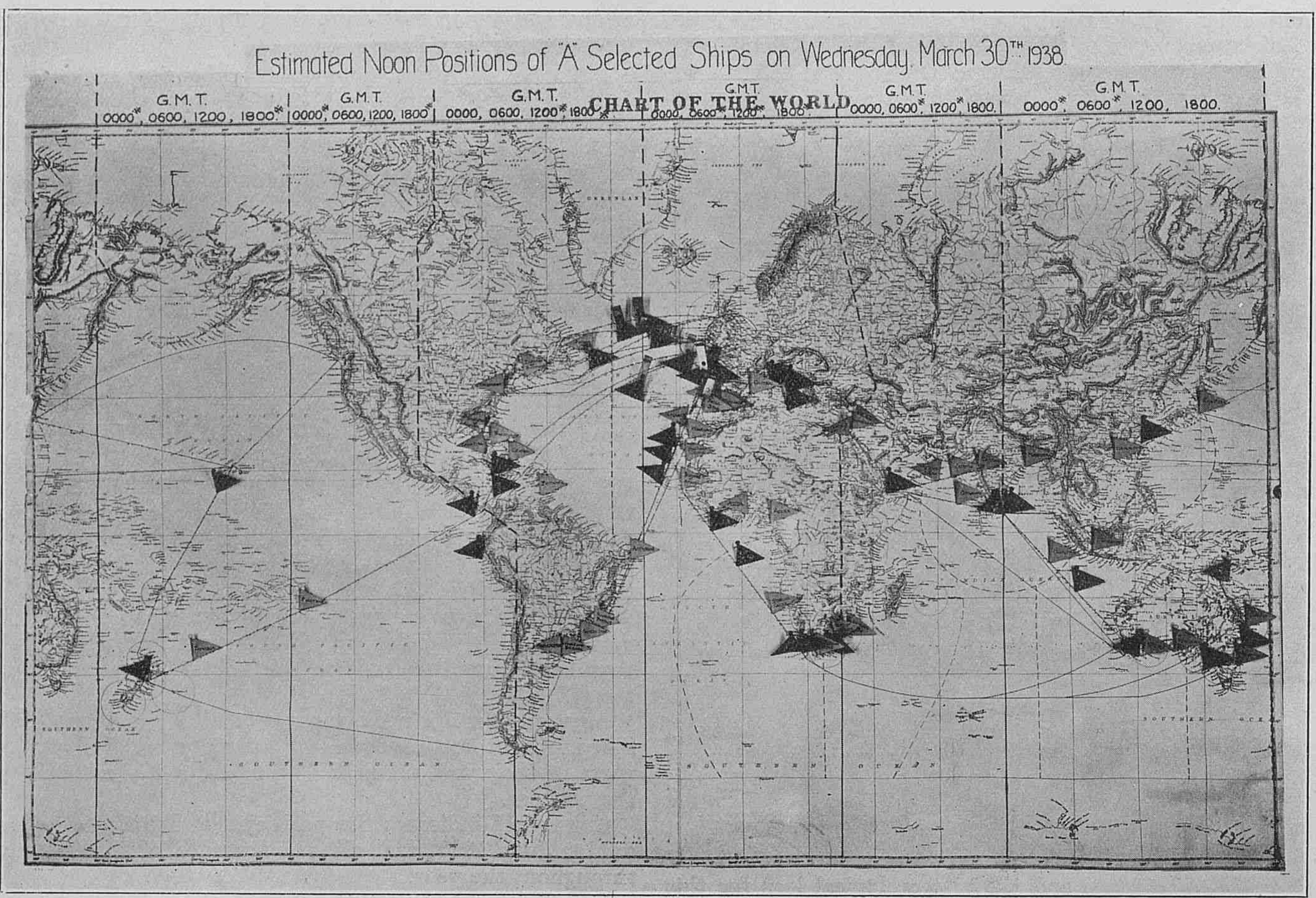
The great assistance which the Commanders and Officers of British Supplementary Weather Reporting ships are giving to the Selected Ship service is highly creditable to themselves and the Port Meteorological Officers and Merchant Navy Agents, who have taken so much trouble in advising them.

In the fulness of time it is hoped that by this system, there will be few, if any, British merchant ships which have not been visited and advised, and given that encouragement which is desirable to extend the Selected Ship system, to adequately function in all parts of the world to meet the purposes of navigation, meteorology and aerial navigation.

Communication has been particularly good through the Post Office W/T Stations with Weather London; and TABLES II and III indicate the number of reports received at Weather London from ships in the Eastern North Atlantic, the North Sea, and Arctic Waters each month during the year.

The photograph overleaf of the daily position chart worked in the Marine Division gives the estimated position on Wednesday, 30th March 1938, of "A" Selected Ships at sea and in ports abroad.

This chart is worked daily for making the roll call through Portishead, and for keeping watch upon the service of "A" Selected Ships in all parts of the world.


Estimated Noon Positions of "A" Selected Ships on Wednesday, March 30TH 1938
G.M.T. 0000*, 0600, 1200, 1800*
G.M.T. 0000*, 0600, 1200, 1800*
G.M.T. 0000, 0600, 1200*, 1800*
CHART OF THE WORLD
G.M.T. 0000, 0600*, 1200*, 1800
G.M.T. 0000, 0600*, 1200*, 1800.
G.M.T. 0000*, 0600*, 1200, 1800.

The roll calls made by Malin Head and Valentia are worked by the officers in charge of those stations themselves, and in this way we have been greatly assisted through the courtesy of the Inspector of Wireless Telegraphy of the General Post Office.

Weather Reports from Cross-Channel Packets and from Arctic Trawlers.

The reporting of weather from mid-channel positions has been continued by the steam packets in a most satisfactory manner.

During the year the service of routine weather reporting has been extended in Northern Waters by a limited number of steam trawlers, when on passage to and from the Arctic fishing grounds.

This service was inaugurated by the steam trawler *Rockflower*, Skipper L. D. ROMYN, in October 1937, and all who have worked it since have proved the skill of fishermen to do this work under proper guidance.

Under such rigorous conditions as prevail in this service, it is highly creditable to the British fishing fleets, and these vessels are a most welcome strength to the voluntary observing fleet.

TABLE IV indicates the number of reports received each month during the year from mid-channel positions. The number of reports received from trawlers in high northern latitudes is included in TABLE III.

The Practical Application of the work.

This work of observation at sea, making reports and receiving reports, forecasting weather, anticipating currents, and making written return of the work voluntarily done, for and in connection with meteorological service, has become more and more closely related with the ordinary working routine of observing ships, so that it is difficult to indicate any new or increased application of marine meteorology to those dealt with in reports of previous years; and particularly that of last year.

Steadily and quietly the British merchant navy is improving its skill in the application of all forms of marine meteorological work, useful and practicable in the services of shipping; and possible one of the useful functions which the Marine Division, its branches and agencies have performed during the past year, has been to assist in some measure in bringing about the exchange of views between master mariners and shipbuilders regarding sea-kindliness and ship design, a matter which naturally follows observation of sea and swell, and which is important both for safety of life at sea and maritime economy.

Port Meteorological Officers and Merchant Navy Agents.

Following the decision to close the remaining merchant navy agencies on the shores of the Pacific, which was announced in the January 1938 MARINE OBSERVER, arrangements have been completed for concentrating the whole of this work upon two Port Meteorological Offices and six merchant navy agencies in Great Britain, all in charge of officers of the merchant navy.

Great assistance has been given to the Marine Division by its branches and agencies in guiding the work, and so helping towards decentralization which is so desirable for efficiency in this work of the sea service, where initiative is vital.

Acknowledgment.

Quarter by quarter, written returns (logs, forms, etc.), which writing is but a fraction of the effort which is being made by the corps of voluntary marine observers, are acknowledged with cordial thanks and grateful recognition in the fleet list which is published in THE MARINE OBSERVER; and notification is sent to the Captains of observing ships of the classification awarded upon the receipt of each return.

The purpose of this report is to give the fullest acknowledgment to the British merchant navy for the magnificent work which has been done the world over in regular observing ships, as a regular routine, and in all other British ships supplementing that work as occasion may require.

This report gives the fullest account which is practicable of the centralized work in the Marine Division, and some account of that of the Port Meteorological Offices and Merchant Navy Agencies. The centralized work being dependent upon the voluntary work done at sea, its successful execution must be of gratification to those at sea who have made it possible.

Lest there should be any members of the corps of voluntary marine observers whose names have been omitted in the fleet list, or the dates of the receipt of any written returns made, inadvertently not published, we would ask them to remember that occasionally there may be inadvertent omissions and sometimes published communications are delayed or fail to reach observing ships through causes beyond our control.

We thank every Commander, Observing Officer and W/T Operator of every observing ship for the work which they have done in connection with the British Selected Ship service, in reporting to all ships, reporting to Weather London, and reporting to Dominions and Foreign Countries party to the Convention of Safety of Life at Sea, the keeping of meteorological logs (by a very limited number of ships most favourably disposed), the keeping of the synchronized weather record, Form 911, the coding and duplication of observations by means of the register, Form 138, the writing of additional remarks which does so much to enhance THE MARINE OBSERVER, reporting ice, making special observations, and all the other work done in co-operation with the British Meteorological Office, and aviation.

Last, but by no means least, we thank most cordially those in British observing ships who have furthered the work along practical lines, such as weather forecasting, to aid navigation; towards the improvement of seamanship, and in helping all those many and various endeavours which tend to help maritime trade.

We ask all those who see THE MARINE OBSERVER to pass on to the Captains, Officers and W/T Operators of British Supplementary Weather Reporting ships our grateful thanks for the work which they do so well in extending the service of Selected Ships when and where necessary.

As a mark of appreciation, the Meteorological Committee are making awards to Commanders and observing officers of ships whose work has been classed Excellent for not less than a certain period during the past year. Their names are given in the list which follows.

London. MARINE SUPERINTENDENT.

1st *April*, 1938.

LIST OF CAPTAINS AND PRINCIPAL OBSERVING OFFICERS TO WHOM THE METEOROLOGICAL COMMITTEE HAVE MADE EXCELLENT AWARDS.

Captains.	Principal Observing Officers.	Ship.
Andrews, C. M.	Pattinson, R. M.	*Zealandic.*
Armstrong, F. O.	—	*British General.*
Barnett, H.	Dell, H. C. R.	*Rangitiki.*
Batho, B. T.	Cladingbowl, R. L.	*Glaucus.*
Biggs, J. H., Commr. R.N.R., R.D.	Sutherland, J. S.	*Corfu.*
Blencowe, J.	Turner, H. C.	*Devon.*
Bone, D. W.	Robertson, R. L.	*Transylvania.*
Boothby, C. R. U., Lieut.-Commr. R.N.R.	MacFie, A. F.	R.R.S. *William Scoresby.*
Brown, A. T., Capt. R.N.R., R.D.	—	*Britannic.*
Brown, W. S.	Ewing, D.	*Montclare.*
Browning, J. B., Commr., R.N.R.	Lapage, J. C.	*Maloja.*
Bulmer, J. R., M.B.E.	Meade, W. E.	*Hibernia.*
Busk-Wood, W. G., Commr. R.N.R., R.D.	—	*Empress of Australia.*
Cameron, H.	Jones, J.	*Northern Coast.*
Carter, E. A. J. W., Capt. R.N.R., R.D.	Nowell, R. B.	*Viceroy of India.*
Chaplin, J. K., Capt. R.N.R., R.D.	Sutherland, J. S.	*Corfu.*
Christie, D.	Warren, A.	*Fordsdale.*
Clayton, R. G., D.S.C., Capt. R.N.R., R.D.	—	*Highland Brigade.*
Collie, A.	King, H. L. P.	*Caledonia.*
Compton, R. W.	Faulkner, J. R.	*Baronesa.*
Cotching, W. A.	Sinclair, I. M. Green, J.	*Rajputana.*
Davies, B. H., O.B.E., Capt. R.N.R., R.D.	Howell, S. W.	*Alaunia.*
Dawson, W.	Hawley, G.	*Tamaroa.*
Dene, R. C.	Simms, J.	*Maloja.*
Dorkin-White, C. E.	Braidwood, T.	*Nardana.*
Dossor, W. A.	Hodgson, G.	*Spero.*
Draper, M. G., Commr. R.N.R. R.D.	Hill, L. A.	*Rawalpindi.*
Edkin, E., O.B.E., Capt. R.N.R., R.D.	Warwick, W. E.	*Scythia.*
Elford, H. C.	Cresswell, G. F.	*Ceramic.*
Ellis, F., D.S.C.	Sherwell, H. N.	*El Argentino.*
Ellis, J. H., Skipper	—	S.T. *St. Cathan.*
Ferguson, H. J., D.S.C.	Duck, N. W. Morison, A. D.	*Montcalm.*
Forrester, W. T., O.B.E.	Swale, E.	*Cavina.*
French, F. E., Capt. R.N.R., R.D.	Strike, J. D.	*Mooltan.*
Gibbings, W. H.	Jones, P. B.	*Inanda.*
Gibbons, G., Capt. R.N.R., R.D.	Gleave, E.	*Berengaria.*
Gilling, W.	Gorley, C. J. H.	*Port Wyndham.*
Grant Pyves, W. A.	Richardson, J. L.	*Mulbera.*
Gray, W. A.	Scotchmer, R. D.	*Wairuna.*
Grayston, E. T., D.S.C., Commr. R.N.R., R.D.	Miller, L. B.	*Karamea.*
Greig, A. C., O.B.E., Capt. R.N.R., R.D.	Marr, G. T.	*Ascania.*
Hall, J. B.	Dickson, J. J.	*New Zealand Star.*
Hardcastle, E.	Jones, R.	*Siamese Prince.*
Harris, F. C. P.	Sayers, L. A.	*Anselm.*
Harrison, R., D.S.O., Capt. R.N.R., R.D.	Legassick, G. V.	*Strathmore.*
Hartman, W. H.	Grant, R.	*Mataroa.*
Hayter, S. W.	Cady, L. W.	*Port Jackson.*
Higgs, W. G.	Dedman, N. J.	*Port Gisborne.*
Hill, L. C., O.B.E., Lieut. R.N.R.	Walker, R. Kirkwood, H.	R.R.S. *Discovery II*
Hill, T. V.	Germein, T. S. Woods, C. A.	*Aorangi.*
Hinchliff, A.	Grunnill, H.	*Torcello.*
Hodges, F. W.	Howe, A. W.	*Isle of Guernsey.*
Hodges, J. A., Commr. R.N.R., R.D.	Moore, W. R.	*Highland Chieftain.*
Holland, E.	Church, P. M.	*Rangitata.*
Hopper, G. E.	Clark, P. A.	*Avelona Star.*
Howard, H. C.	Robson, R.	*Almeda Star.*
Hughes, W. J.	—	*Clan Macfarlane.*
Irving, R. B., O.B.E., Capt. R.N.R., R.D.	Toyne, S. St. G. Evans, J. P. V.	*Aquitania.*
Jack, H. M.	Perry, R. A.	*Carthage.*
Jackson, W. H. P.	Burt, W. G.	*Tairoa.*
Jaunay, F. L. G.	Bradley, P. E.	*Waiotapu.*
Jonsen, W. J., Skipper	—	S.T. *Cape Barfleur.*
Kelly, G. B.	Barr, D. G.	*Cameronia.*
Kippins, T., D.S.C.	Moate, J. S.	*Port Hobart.*
Lamb, C. B.	Bennett, J. D.	*Remuera.*
Large, E. H., Commr. R.N.R., R.D.	Eckford, R. D.	*Orduna.*
Law, D. A.	Humphries, H. L.	*Clydefield.*
Lawson, J. H.	Haigh, B. C.	*Apapa.*
Lee, O. J. P., Capt. R.N.R., R.D.	Caris, N.	*Clement.*
Lettington, A. E.	Ormsby, E. J.	*Rotorua.*
Lyndon, E. P., Lieut.-Commr. R.N.R., R.D.	Rind, B. H. G.	*Strathnaver.*
McIntosh, A.	Macfarren, E. B. D.	*Mataroa.*
McKellar, A. W., Capt. R.N.R., R.D.	Warren, N. L. Brownings, H. J.	*Rangitane.*
McKenzie, R.	Johansen, E.	*Esperance Bay.*
McNeil, N., O.B.E.	Walton, E. H. H.	*City of Nagpur.*
McRostie, J.	Law, W. J.	*Samaria.*
Macdonald, D.	Grantham, D. E.	*Hauraki.*
Mann, R. P.	—	*Worcestershire.*
Marriott, E.	Gravelle, A. C.	*Maron.*
Martin, W.	Gell, A. H. S.	*Niagara.*
Mason, E.	Cubbon, J. W.	*City of Lyons.*
Meikle, A. R., Capt. R.N.R., R.D.	Burns, R. V. Davis, E. A. G.	*Montrose.*
Melling, A. W.	Molineux, A.	*Cairnglen.*
Merchant, W. J.	Williams, N.	*City of Hereford.*
Miles, F. R., Capt. R.N.R., R.D.	Fletcher, G. M.	*Almanzora.*
Moore, H. A., Capt. R.N.R., R.D.	McKillop, R.	*Duchess of Richmond.*
Murchie, P. A., O.B.E., Capt. R.N.R., R.D.	Owen, F. J.	*Carinthia.*
Murley A. R.	Moore W. R.	*Highland Chieftain.*
Nelson, C. S.	Rome, H. M.	*City of Lille.*
Nicholls, A. E.	Hardy, T. S.	*Ormonde.*
Noakes, G. C. H., Commr. R.N.R.	Crist, F. W.	*Tudor Star.*
O'Connor, J.	Johnston R. ...	*Ixion.*
Oram, B. B., Commr. R.N.R., R.D.	Patchett, F. E.	*Georgic.*
O'Sullevan, F. R.	Stratford, J. C.	*Orcades.*

Captains.	Principal Observing Officers.	Ship.
Owens, A. L., Capt. R.N.R., R.D.	Mackay, E. M.	*Orion.*
Parker, C. S.	Prowse, M. R.	*Moldavia.*
Parry, G. R., Commr. R.N.R., R.D.	Stanley, W. A.	*Empress of Britain.*
Pert, D.	—	*Beaverford.*
Pickering, H.	Williams, D. A.	*Vienna.*
Pilcher, C. R.	Knott, J. A.	*Somerset.*
Pitman, R.	Williams, W. B.	*St. Helier.*
Pope, W. L., Capt. R.N.R., R.D.	Spurling, E. J.	*Mongolia.*
Quirk, W.	Holt, R. E.	*Eastern Coast.*
Reed, A.	Hughes, J. L.	*Wairuna.*
Rhodes, H. R.	West, D.	*Cathay.*
Richardson, C.	Belton, C. H.	*Duchess of York.*
Ridyard, A., O.B.E.	Matthews, H.	*Reina del Pacifico.*
Rigden, T. H.	Milburn, T. B.	*Port Darwin.*
Roberts, T. V., Capt. R.N.R., R.D.	Roe, G. L. Winder, R. S.	*Arawa.*
Robertson, D. I. C.	Wheeler, W. P.	*Tinhow.*
Robinson, C. A.	Read, E. C.	*Port Auckland.*
Robinson, F. W.	Bennett, J. D.	*Remuera.*
Robinson, J. E.	Newton, C.	*Cato.*
Roche, C. B.	Sergeant, T. A.	*Mooltan.*
Romyn, L. D., Skipper ...	—	S.T. *Rockflower.*
Sandison, D. C.	Ness, T. R.	*Explorer.*
Sapsworth, C. H.	Oatridge, E. J.	*Duchess of Bedford.*
Sarson, M. J.	Hulse, J. N.	*Orford.*
Savage, N.	Edgecombe, C.	*Ormonde.*
Sergeant, E. B.	Cole, W.	*Duke of Lancaster.*
Shaw, B.	Smith, H. L.	*Worthing.*
Shooter, J. C.	Jones, D. D.	*Abosso.*
Smart, R. W.	—	*California.*
Smith, H. Elliott, Lieut.-Commr. R.N.R., R.D.	Langton, J. C. Lord, C. E.	*Chitral.*
Smith, J. A.	Farmiloe, G. M.	*Ranchi.*
Smith, W. D. C.	Gow, W. W.	*Narkunda.*
Stenson, F. J., Capt. R.N.R. R.D.	—	*Clan Macalister.*
Stook, C. W.	Mitchell, T. S.	*British Premier.*
Stubbs, S. E., O.B.E., Commr., R.N.R., R.D.	Austin, D. W.	*Aurania.*
Summers, W. G.	Falkiner, H. H.	*Akaroa.*
Thomas, E. O.	Garner, R. E.	*Port Bowen.*
Thorne, G. G., Capt. R.N.R., R.D.	Williams, D.	*Orontes.*
Tickell, J. M. M.	Mayne, C. Peters, G. R.	*Strathaird.*
Toten, A. T.	Gell, A. H. S.	*Niagara.*
Townley, J. C., Capt. R.N.R., R.D.	Hunter, W. K.	*Queen Mary.*
Upton, H. L., D.S.C., Capt. R.N.R., R.D.	Young, M. W. N. Knott, J.	*Durham.*
Vaughan, P. R., D.S.C., Commr. R.N.R., R.D.	Jones, S. A.	*Laconia.*
Watt, J.	Philip, J.	*Benarty.*
Webber, T. H.	Wilson, J. E.	*Newfoundland.*
Webster, J. F.	Weller, S. J.	*Adrastus.*
Weller, W.	—	*Edinburgh Castle.*
Williams, H.	Gow, W. W.	*Narkunda.*
Williams, J. P.	Ross, W. F.	*Rhexenor.*
Williams, J. V.	Eyre-Walker, R.	*Kent.*
Williams, R.	Jones, C. A. E.	*Cambridge.*
Willliams, T.	Davis, J.	*Australia Star.*
Williamson, A. D.	Tyrrell, A. J.	*Willandra.*
Wood, C., D.S.C.	Hamilton, R. F.	*Themistocles.*
Woodhead, T. H.	Clark, J.	*Dearne.*
—	Bradley, J. G.	*Andania.*
—	Hyland, R. J.	*Beaverburn.*
—	Osborne, L.	*Mashobra.*
—	Stephenson, G. E.	*Dunnottar Castle.*
—	Whayman, J.	*Crispin.*
—	Wilson, W. C.	*Yoma.*

TABLE I.—The Number of Sets of Observations Extracted from Meteorological Logs during each Year from 1921.

	1937–38.	1936–37.	1935–36.	1934–35.	1933–34.	1932–33.	1931–32.	1930–31.	1929–30.	1928–29.	1927–28.	1926–27.	1925–26.	1924–25.	1923–24.	1922–23.	June, 1921–22.
Current Year. Number of complete sets of observations extracted and punched on cards with currents extracted and phenomena indexed.	29,757	36,275	16,843	48,194	41,932	58,747	70,718	19,185	17,987	43,117	73,745	78,180	75,852	65,000	74,749	97,533	63,731
Arrears. Number of complete sets of observations received since 1920, extracted and punched on cards during the years 1932–38.	—	—	32,067	—	9,546	—	2,047	28,497	24,771	16,796	8,622	6,975	5,555	8,234	7,473	5,705	7,022
Number of part sets of observations in the Pacific and N. Atlantic received previous to 1920, extracted and punched on to cards and phenomena indexed since January 1st, 1933.	390,396	201,702	120,477	126,217	82,602	17,798	—	—	—	—	—	—	—	—	—	—	—
Ocean Currents. Number of additional observations of current from the year 1910 extracted.	10,786	6,456	2,817	4,821	4,850	6,118	8,609	7,980	10,913	2,626	3,496	8,242	8,210	5,746	4,259	1,826	—

TABLE II.—Number of Observations received by Weather London through Portishead Radio from British "A" Selected Ships.

April, 1937.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan., 1938.	Feb.	March.	The Year.
567	633	653	736	669	653	611	532	506	450	468	478	6,956

TABLE III.—Number of Observations received by Weather London through Malin Head, Valentia and Humber and Wick, Radio from British "B" Selected Ships, and Supplementary Weather Reporting Ships and from Steam Trawlers through Wick.

	April, 1937.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan., 1938.	Feb.	March.	The Year.
Malin Head	22	28	88	89	107	101	61	34	36	22	17	7	612
Valentia	162	205	321	340	335	342	215	178	198	193	168	249	2,906
Humber	—	—	9	8	4	14	14	15	15	17	8	13	117
Wick	—	—	—	—	—	—	7*	9*	13*	20*	28*	39*	116*
Total	184	233	418	437	446	457	297	236	262	252	221	308	3,751

* Includes Steam trawlers.

TABLE IV.—Number of Weather Reports received by Weather London from Ships in Home Waters.

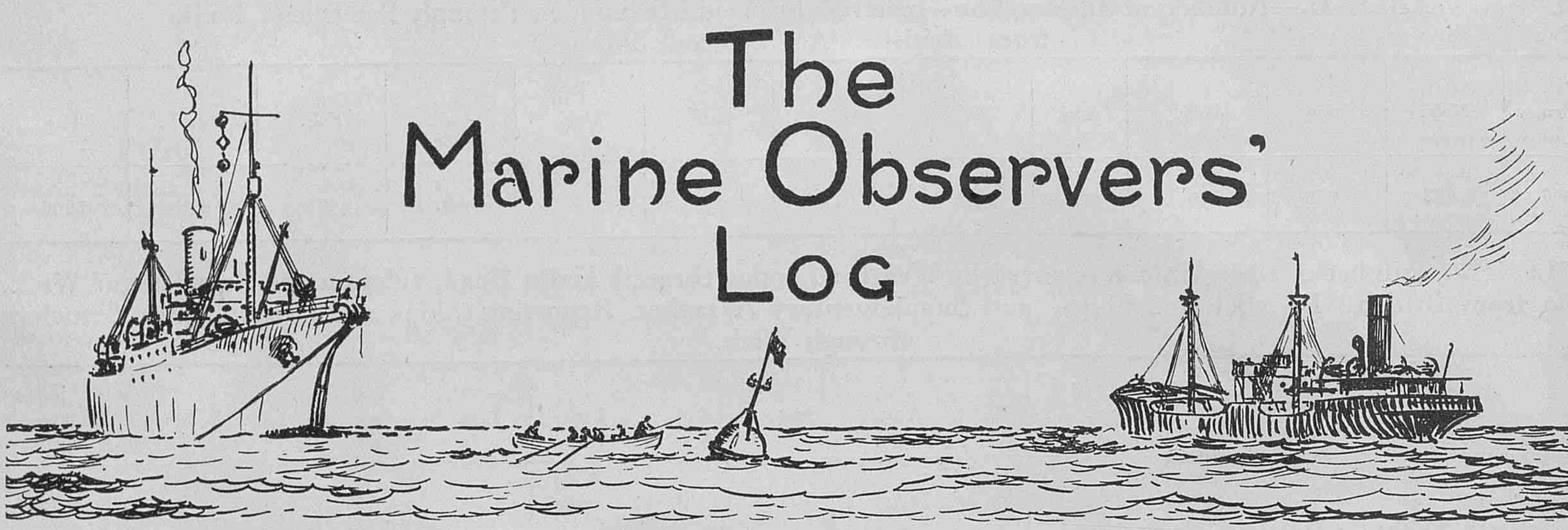
April, 1937.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan., 1938.	Feb.	March.	The Year.
140	135	147	146	142	138	136	133	142	135	130	146	1,670

TABLE V.—Details of Voluntary Observing Fleet and Coast Stations.

	At 31st March.										
	1938.	1937.	1936.	1935.	1934.	1933.	1932.	1931.	1930.	1929.	1928.
No. of M.L. Ships	22	29	41	49	50	49	65	101	120	123	123
No. of Form Ships	324	323	312	298	304	300	307	386	355	364	373
No. of Stationary Training Ships and Lighthouses.	5	5	5	5	5	10	10	10	10	10	10
Total No. of Observing Ships	351	357	358	352	359	359	382	497	485	497	506
No. of Form 911 Ships with whole or part Meteorological Office instrumental equipment. S.	231	220	200	190	183	169	126	93	31	31	32
C.C.	18	18	17	17	9	10	10	10	10	10	10
No. of Selected Ships	279	281	285	287	292	299	306	312	290	289	268
No. of Ships with Instruments on Board: returns overdue	0	0	0	0	0	0	0	1	0	0	0
No. of Coast Stations and Light Vessels equipped with instruments for Form 914.	18	18	18	18	18	18	18	30	31	31	32
No. of Barometer errors ascertained or checked.	1,276	1,156	1,143	1,196	1,169	1,190	1,353	1,357	1,192	1,362	1,398
Meteorological Logs	78	88	102	119	122	126	221	285	266	275	279
Ships' Meteorological Records (Forms 911)...	2,585	2,544	2,429	2,377	2,352	2,169	2,660	2,686	2,375	2,290	2,261
Forms 914 (Coast Observations)	216	215	215	215	216	216	353	363	372	371	383
No. of Wireless Weather Reports addressed to Weather London received through :—											
Portishead	6,956	6,761	6,278	5,595	5,443	5,064	5,175	5,206†	—	—	—
Valentia	2,960	916	—	—	—	—	—	—	—	—	—
Malin Head	612	123	—	—	—	—	—	—	—	—	—
Humber	117	—	—	—	—	—	—	—	—	—	—
Wick	116*	—	—	—	—	—	—	—	—	—	—
Lighthouse Registers	4	4	4	4	13	9	17	8	18	10	12
Home Waters Telegraphic Reports	1,670	1,652	1,650	854	838	972	875	720	701	751	773
Cadets Meteorological Log	9	8	10	9	9	7	11	8	9	9	7
DATA EXTRACTION.											
Logs collected since 1920 extracted... ...	238	190	40	137	131	191	175	50	41	100	166
Logs collected before 1920 extracted ...	950	544	295	309	441	97	—	—	—	—	—

* Including Steam Trawlers in Arctic Waters. † 11 months.

The Marine Observers' Log



July, August and September.

It is hoped that these pages will be filled each quarter with a selection of the contributions of Mariners in manuscript, or remarks from the Logs and Records of regular Marine Observers.
Responsibility for statements rests with the Contributor.

TIDAL STREAMS AND CURRENTS INSIDE THE GREAT BARRIER REEF AND THE EAST AUSTRALIAN COAST CURRENT.

THE following remarks by Officers of long experience in South Pacific waters are contributed through Captain ROSKRUGE, Merchant Navy Agent at Sydney, N.S.W. :—

By Captain A. M. FRAME, S.S. *Taiping*.

Around Thursday Island and Torres Straits, extending 100 miles south in the Great Barrier Reef, currents are not met with, tides being strong and irregular, chiefly stronger during the south-east season. Continuing south through the Great Barrier Reef, tides are weaker, the currents taking the main routes and channels according to the season, viz. from October to April during the north-west season we experience a set to the south-east, and during the south-east season a set to the north-west, averaging 1 to 2 knots; also, during the south-east season currents are found setting through the main openings to the westward ½ to 1 knot (towards the Queensland Coast).

These currents are met with tidal streams throughout to the Percy Islands, tides being strong and irregular in this locality. From the Percy Islands to the Tropic of Capricorn the southerly current is weak till Sandy Cape is reached, after which it strengthens from 1½ to 3 knots, 12 to 14 miles off the coast, and continues throughout to Cape Howe, weakening during south-east weather and strengthening during northerly or fine weather.

The strongest southerly set I have experienced from Brisbane to Sydney and south, is approximately 12 to 15 miles off the coast, being exceptionally strong between Cape Moreton and Cape Byron. The width of the stream is unknown to me as on my trips from Sydney to Lord Howe Island I have not experienced a southerly set after proceeding 25 miles off the coast, good courses made and nothing allowed for southerly set.

By Captain W. MICHIE, M.V. *Macdhui*.

I have had considerable experience whilst in the employ of Burns, Philp & Co., Ltd., of ascertaining the set and drift of ocean currents whilst navigating inside the Barrier Reef and in the Coral Sea.

Dealing only with currents experienced outside the Barrier Reef, as Torres Straits Pilots could give ample information regarding currents inside the Barrier Reef, on a voyage from Port Moresby to Cairns via Trinity or Grafton Passage we invariably experience a current setting from south to S.S.E. of 1 to 1½ knots between Osprey Reef and the Barrier. This current has on several occasions got us into trouble owing to the difficulty, especially at high water on a calm morning, of distinguishing the entrance to Trinity Passage. And, as you are aware, various Captains in the employ of Burns, Philp & Co., Ltd., have made a request for a distinguishing mark or beacon to be placed in the vicinity of the entrance to Trinity or Grafton Passages. From a position 2 miles east of the N.E. Horn of Lihou Reef to Indian Head we always experience a southerly set of at least 1 knot. This applies whether proceeding between Frederick Reef and Saumarez Reef or between Saumarez Reef and the Barrier Reef. I have no doubt that this current is the same one that sets south to S.S.E. outside the Barrier Reef. As it rounds the sharp trend of the Barrier just north of Saumarez Reef it runs fairly strong and is liable to set a south-bound vessel on to Saumarez Reef. I have no doubt that the force of these currents are governed by the prevailing S.E. trade winds. That is, after a long spell of S.E. wind they will run with increased intensity. Further north in the Coral Sea we have noticed the westerly equatorial current which operates strongly in the latitude of Mellish Reef.

Further west towards the Papuan Gulf currents are governed by the prevailing N.W. or S.E. monsoon, also by the flood waters of the Fly River.

The vast quantities of drift wood and floating trees bear this out.

In the Dampier and Vitiaz Straits the currents are chaotic and dangerous, frequently attaining a velocity of 3 to 4 knots and are not to be trusted at any season of the year, whether N.W., Monsoon, or S.E. Trade.

By Captain C. W. BLAIN, M.S. *Merkur*.

Across the North Australian Coast, between Arnheim Land and Booby Island, a westerly set is usually experienced, never more than about half a knot, and during the North-West Monsoon little, if any, prevails.

Inside the Barrier Reef, from Booby Island through Prince of Wales' Channel, following the recommended track on the charts, down as far as High Peak Island, little, if any, current is met, but strong tides prevail, particularly in the far north, which prevent an observer on a moving ship from making any definite statements about the currents.

South of High Peak Island, a slight southerly set can be expected, which appears to increase further south, and, 9 miles off Sandy Cape, may be as strong as 1½ knots, though more frequently about three-quarters of a knot.

The prevailing trade wind does not seem to affect this current, but during a southerly gale, which may be experienced at times, little, if any, current is noticeable, but, as the weather then influences a vessel's speed, it is hard to decide exactly what effect the current is having.

From Cape Moreton south, there is usually a strong southerly set, which appears to be strongest about the hundred-fathom line; a knot and a half may be expected, though its strength seems to be erratic, as sometimes it increases to 2½ knots.

On the run across to Lord Howe and Norfolk Islands from Sydney, after leaving the coastal current, usually a slight northerly or north-east set is met, with a strength of about half a knot.

By Captain S. ROTHERY, S.S. *Montoro.*

The currents in the Coral Sea are so changeable that little of a definite nature can be said concerning them.

Throughout the year there is a current running S.E. along the Papuan coast from the Gulf to Sud-est Island during the S.E. season against the wind at approximately 1 knot; during N.W. season up to 2½ knots (January to end March).

The Australian Barrier current I have not noticed running from further north than the 1½ mile opening (Latitude 14° 26′ S., Longitude 145° 26′ E.), but throughout the year it runs outside the Barrier—strong in S.E. weather and weak in N.W. weather—always travelling south-eastwards. At the eastern end of the Barrier, north of Swain Reefs, the current rips are very heavy (resembling the actual break on the reef) for many miles in a S.E. direction. To be caught here in cyclonic weather would be disastrous. The rise and fall at this corner is over 12 feet, the coral being covered at high water and many feet in the air at low water. The current splits on Saumarez Reef, runs strongest around the northern end and weakly close in to the south-western side.

During the S.E. season from Lihou Reef northward for 40 miles there is a set of approximately 1 to 2 knots to the westward, making it dangerous passing this reef at night without a good margin. I have not noticed any set here during N.W. seasons. Coming south from Swain Reefs to Sandy Cape there is always a set in towards the land. This is not experienced going northward. Passing Sandy Cape the current sets strong to S.E., well away from the land. Invariably this is picked up again by vessels leaving Brisbane when in the vicinity of C. Byron, 8 or 10 miles distant. It continues, passing approximately 14 miles off North Solitary. From here, the direction is to a point 13 miles south-east from Sugarloaf Pt., thence towards Sydney Heads. The rate varies from 1 to 4 knots.

By Mr. K. MORRIS, Torres Straits Pilot.

I am of opinion that the southerly current on the Queensland coast is much as charted from Sandy Cape to the point off Seal Rocks where it branches off to S.E. On the Inner Route inside the Barrier Reef right up to Thursday Island during the S.E. season, about April to December, a set to the northward is generally experienced up to 2 knots, according to the strength of wind. This set is, however, much affected by the tides, especially about the last hundred miles before reaching Thursday Island. The general tidal information shown on the charts for that part of the coast appears to be very accurate, and I do not think that there are any constant currents in that part. The set in the Gulf of Papua is also usually to the N.W. during this time of year. In the N.W. season, December to April, a set to the south is sometimes felt, down to about Cooktown, but this is seldom strong, as strength of wind is generally rather irregular. But this is also affected by the tides, which always exceed these sets in strength.

By Mr. T. A. L. HERVEY, Australia Coast Pilot.

From Thursday Island to Cooktown during the N.W. season, December to April, there is a slight set to the southward inside the Barrier, with a tendency to a set in and out through the main passages, chiefly after heavy rains, when the rivers are in flood, and during cyclonic weather.

From Thursday Island to Cooktown, during the S.E. season, May to November, there is a permanent set to the northward of ½ to ¾ knot, and as the wind is much stronger than the N.W. wind, the set through the passages is not so noticeable.

From Cooktown to Sandy Cape, I think, is chiefly tidal, and from there down to Danger Point, a southerly set from ½ to 2 knots has been my experience. The times of H.W.F.C. vary slightly as shown on the charts, according to the strength of the wind.

TIDE RIP.

Approaching Strait of Gibraltar.

THE following is an extract from the Meteorological Record of S.S. *Clan Macfarlane.* Captain W. J. HUGHES. Liverpool to Port Said. Observer, Mr. G. MATHIESON, 2nd Officer.

22nd September, 1937. At 2.00 p.m. A.T.S., steering 097°, and 20 miles from Strait of Gibraltar, noticed the difference in colour of water ahead with a lip of brown froth, stretching in a N. by W. to S. by E. direction. On entering this warmer water from the Mediterranean, the tide-rip was sufficiently strong to cant the vessel to port nearly 3 points from her course. This was a new experience to the writer who has not found it so strong on any previous occasion. It would be troublesome at night with a lot of traffic close to, particularly if one wished to alter course hurriedly for a small fishing craft, a common enough happening in those waters.

CURRENT RIP.

Southern Ocean.

THE following is an extract from the Meteorological Record of S.S. *Themistocles.* Captain C. WOOD, D.S.C. Teneriffe to Australia via Cape Town. Observer, Mr. R. F. HAMILTON, 3rd Officer.

On 15th August, 1937, at 10.23 a.m. A.T.S. (0619 G.M.T.) observed a current rip extending in a N. by E. to S. by W. direction as far as the eye could see. This line was not straight but full of bends, some to the eastward and some to the westward, but general direction was as above. It was approximately 200 yards wide. Vessel at time steering 090° at 13 knots, barometer 30.56 in., air temperature 54° F., sea 56° F. before crossing rip, and 55° F. afterwards. The rip gave the appearance of a tide running over shallow ground. The eddies and swirls were quite strong or appeared to be. Sky was 7/10ths clouded with Stcu., wind S.W. by W., force 2. Slight sea and moderate long westerly swell.

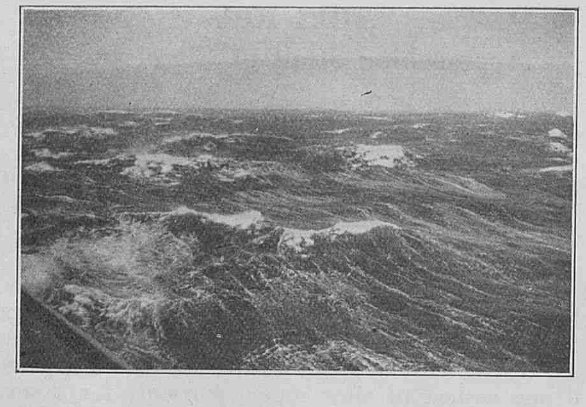
Position of Ship :—Latitude 40° 02′ S., Longitude 61° 40′ E.

PHOTOGRAPHS OF HIGH SEAS.

South Pacific Ocean.

THE accompanying photographs have been received with the Meteorological Record of S.S. *Rotorua,* Captain A. E. LETTINGTON, and were taken by Mr. E. J. ORMSBY, 3rd Officer, who remarks that they show an interesting comparison.

Photograph taken on 19th June, 1937, when off the New Zealand coast in a moderate gale with the wind ahead.



Photograph taken at 2200 G.M.T. on 18th July, 1937, when in a cyclone. Ship's position at 1800 G.M.T. :—Latitude 34° 46′S., Longitude 152° 55′ W.

At 2200 G.M.T. wind was N.W., force 9, barometer 29.30 in., whole gale, very high sea, very steep N.N.E. swell, overcast, fierce rain squalls. Barometer commenced to fall again. Altered course to keep vessel running before the wind. Squalls of hurricane force. At this stage of the storm, sea was so lashed by the wind that a mist was formed reaching nearly fifty feet high (visible in photograph).

HIGH WAVES.

South Pacific Ocean.

The following is an extract from the Meteorological Record of M.S. *Waiwera*. Captain W. C. Meek. New Zealand to London.

On 22nd September, 1937, at 1200 G.M.T. (0500 Z.T.), a low barometer reading of 973 mb. was recorded on the mercurial barometer, corrected reading, which was pumping considerably. During this day waves of at least 50 feet from trough to crest were observed. Wave fronts appeared to be only 20° from vertical with crests overhanging the body of the wave some while before breaking. Wind reached force 12 at times.

Position of Ship :—Latitude 56° 36′ S., Longitude 111° 12′ W.

HEAVY SWELL.

Strait of Le Maire.

The following is an extract from the Meteorological Record of S.S. *Westmoreland*. Captain E. R. Kemp. New Zealand to Southampton. Observer, Lieut. R. S. Frost, R.N.R., 3rd Officer.

10th July, 1937, at 08.35 A.T.S. when approaching the Strait of Le Maire from the southward, with Morro Sud Lighthouse bearing 319° (true), distant 10 miles, course 045° (true), a steep tumbling N.N.E. swell was experienced. The ship was pitching violently and shipping heavy water forward, engines were racing badly. In order to avoid damage, course was altered to bring the swell on the starboard bow (000° true) with a view to making a zig-zag course through the Straits. At 09.35 swell had decreased considerably and normal course was resumed. A gentle W.N.W. breeze was blowing and the barometer was steady at 1007 mb. High tide at Good Success Bay was found to be 06.00 A.T.S. by the method of tidal differences. It would appear that the current was still setting to the northward at 08.35 A.T.S. and that it was slack water at about 09.35 A.T.S.

SEA TEMPERATURES.

Belle Isle Strait.

The following remarks have been received from S.S. *Beaverdale*. Captain A. Rothwell. London to Montreal and Home.

August, 1937. When in Latitude 52° 01′ N., Longitude 54° 04′ W., steering 256° (T) for a position 4 miles south of Belle Isle, the sea temperature suddenly rose from 45° F. to 54° F., and increased nearer Belle Isle to 58° F., air 57° F., at this time we had passed several bergs. When 8 miles west of Belle Isle the sea temperature rose to 63° F., air 60° F., and remained between 63° F. and 64° F. until as far south as Cape Whittle. The readings were checked by Engine Room Intake and in all cases they were 1° to 2° higher than surface. I made a note of this, and on our eastbound passage again took temperatures between the same points with the following results.

Off Cape Whittle air 53° F., sea 54° F. Engine Room Intake 55° F. and gradually rose, when off Greenly Island air 54° F., sea 58° F., Engine Room Intake 62° F., and in the Strait the readings were: air 57° F., sea 58° F., Engine Room Intake 61° F. Six miles west of Belle Isle it dropped, air 46° F., sea 45° F., Engine Room Intake 43° F. The temperatures remained, surface 45° F. to 47° F., until we crossed 50° W. Longitude on " G " Track for Bishop Rock. On both occasions, on the previous day, the wind had been strong N.N.W. Throughout this season the sea temperature in the Strait has been a little higher than usual, and it may account for no ice being in the Strait this year, but no Master looks for a sea temperature of 63° F. as a rule in and off Belle Isle Strait.

Gulf of Aden.

The following is an extract from the Meteorological Record of S.S. *Clan Macindoe*. Captain H. Andrews. Madras to Suez. Observer, Mr. E. H. Pyett, 3rd Officer.

With reference to the report of the S.S. *Mashobra* on sea temperatures in the Gulf of Aden given in the July, 1937, issue of The Marine Observer, it might be of interest to record the following observations made on this present passage from Madras to Suez.

On the night of the 12th/13th August, 1937, while steaming between Aden and Perim Island, remarkable variations of air and sea temperatures were observed. Shortly after 8 p.m. (A.T.S.), in a position 30 miles south-west of Aden, the sea temperature, which had previously been 77° F., dropped suddenly to 70° F. and the air temperature, previously 77° F., dropped to 74° F.; wind at the time, W.S.W., force 3; depth of water from chart, 41 fathoms. A little later the wind shifted to W.N.W., force 4, slightly off shore, when the air again became warmer, waves of hot and cold air being very noticeable, the air temperature on the bridge varying rapidly as much as 10° F. The sea temperature was taken at 10 p.m. when 20 miles south-east of Ras-al-Ara, and again found to be 70° F., air at the time varying on the bridge from 74° F. to 80° F. The air temperature about 6 feet above sea level was taken and found to be 73° F., steady. Similar conditions continued until 1 a.m. (A.T.S.) by which time we were approaching the Straits of Bab-el-Mandeb, when the sea temperature rose to 75° F. and the air became more settled with a temperature of 80° F. Wind W.N.W., force 3. The sea and air temperatures continued to rise until 3 a.m. when we passed Perim Island and conditions became normal with an air temperature of 85° F. and sea temperature of 86° F., the wind having veered to N.W., force 3.

Throughout the night the air remained clear and cloudless with only a slight haze around the horizon. This seems remarkable under such conditions.

The observations support the theory given in The Marine Observer of cooler water coming to the surface between Aden and Perim to replace that drawn away by the south-west monsoon. As the surface density in the Gulf of Aden is about 1027 at 87° F., and that of the Indian Ocean and Arabian Sea 1025 at 80° F., it is interesting to note that this cooler water must be drawn from a considerable depth, and in the eastern part of the Gulf of Aden the sea temperature near the bottom must be, comparatively speaking, very low indeed.

The following is an extract from the Meteorological Record of S.S. *Benwyvis*. Captain H. J. Small. Observer, Mr. W. M. Marshall, 2nd Officer.

26th August, 1937. 1500 G.M.T. approaching Straits of Bab-el-Mandeb a thin film of mist appeared on sea surface, through which ships and land in the vicinity appeared considerably distorted. The sea temperature was found to be 66° F., air 82° F., barometer 29.56 in., falling slowly. Visibility moderate to good. Half an hour later air and sea temperatures had risen to 91° F. and 90° F. respectively; very good visibility.

Position of Ship :—110°, 35 miles from Perim Island.

The following is an extract from the Meteorological Record of M.S. *Shropshire*. Captain R. S. Evans, O.B.E. Rangoon to London. Observer, Mr. A. E. Young, 3rd Officer.

A sudden drop in the sea temperature was recorded on 27th August, 1937, from a position 20 miles south of Aden to a position 2 miles west of Perim Island.

At 11.0 p.m. A.T.S. the wind was from light to fresh breeze, sky overcast, with a few drops of rain, sea moderate, air temperature 91° F. and sea temperature 91° F.

During the middle watch (midnight to 4.0 a.m.) the sea temperature dropped from 91° F. to 57° F., and by 4.0 a.m. had risen to 91° F.

Position of " cold area " : Latitude 12° 24′ N., Longitude 44° 15′ E. to Latitude 12° 40′ N., Longitude 43° 21′ E. (Straits of Bab-el-Mandeb)

Note.—Considerable changes of sea temperature are observed in the neighbourhood of the Straits of Bab-el-Mandeb during the south-west monsoon season and these may be very great in the period July to September. The observation of M.S. *Shropshire* shows a drop of 34° F., and S.S. *Benwyvis* shows one of 25° F., on the previous day. These are the largest temperature falls for this region so far published in The Marine Observer. In Volume VIII, 1931, page 165, an account was given of a fall of 20° F., observed by S.S. *British Dominion*, was given.

VOLCANO.

Fanua Lai, Vavau Group.

The following is an extract from the Meteorological Record of S.S. *City of Canberra*. Captain H. R. Jackson. Panama Canal to Brisbane. Observer, Mr. A. Travis, 2nd Officer.

On 29th September, 1937, at 10.50 p.m. A.T.S. (1026 G.M.T., 30th), Fanua Lai Island (Vavau Group) was seen to be in eruption. The island was in sight until 1.35 a.m. A.T.S. (1311 G.M.T.) and during that time was very active, flaring up at frequent intervals and sending showers of sparks into the sky. A northerly set of 7 miles was experienced from noon to midnight when approaching the Vavau Group. As the vessel passed about 20 miles to the southward of Fanua Lai, no cinders or ashes fell on deck, the island being to leeward and the wind from S.S.E., fresh. Sea temperature 79° F.

Position of Ship :—Latitude 18° 04′ S., Longitude 174° 22′ W.

ALBATROSS.

South Atlantic Ocean.

The following is an extract from the Meteorological Record of S.S. *Baronesa*. Captain R. W. Compton. Liverpool to Montevideo. Observer, Mr. J. R. Faulkner, 2nd Officer.

On 1st August, 1937, at noon, ship's time, an albatross was sighted which flew about steamer, finally disappearing about 4.0 p.m. Weather at the time was partly cloudy. Wind S.E. by E., force 5. Temperature of air 79° F.

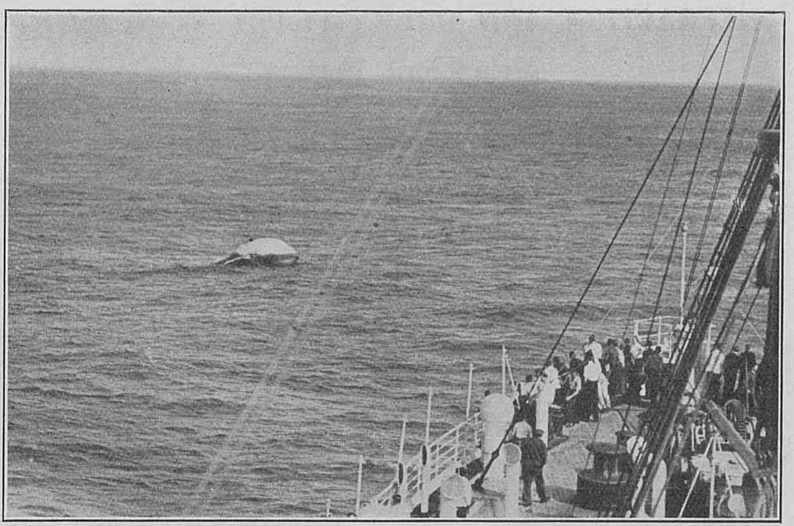
Position of Ship :—Latitude 7° 45′ S., Longitude 32° 39′ W.

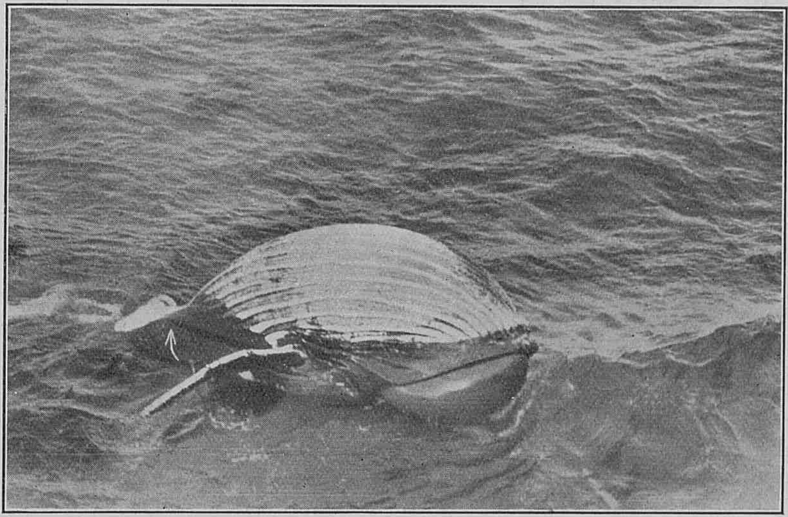
Note.—In the July, 1937, number, page 92, Volume XIV, No. 127, accounts were published of albatrosses met with in the South Atlantic Ocean in Latitudes 13° S. and 10° 30′ S., and Captain Robinson, S.S. *Port Auckland*, wrote that it would be of interest to know what is the most northerly latitude in which these birds have been observed. The latitude of the present observation is the farthest north of the three.

PHOTOGRAPHS OF DEAD WHALE.

South Indian Ocean.

The accompanying photographs and remarks have been received with the Meteorological Record of S.S. *Orford*. Captain M. J. Sarson. Fremantle to London. Observer, Mr. J. N. Hulse, 3rd Officer. The photographs were taken by Lieut. G. R. Grandage, R.N.R., 2nd Officer.





24th August, 1937, at 2 p.m., in Latitude 30° 44′ S., Longitude 114° 15′ E., 110 miles N.W. of Fremantle, observed dead whale, inflated and floating belly uppermost. Length 35–40 feet, width 8 feet. Several birds (Dark Skua) in vicinity. In the first photograph one can just be seen on the whale's belly.

It is presumed that the whale had been harpooned, inflated and marked—the second photograph shows a mark ↖—and then lost. It had apparently drifted considerably as it was not in a whaling district and by its offensive smell.

GREEN RAYS AT SUNSET.

North Atlantic Ocean.

The following is an extract from the Meteorological Record of M.S. *Rangitiki*. Captain H. Barnett. London to Colon. Observer, Mr. H. C. R. Dell, 3rd Officer.

26th September, 1937. A few minutes after sunset three green rays were seen to shoot up from horizon, the northernmost being vertical and brightest, the other two decreasing in intensity, all apparently coming from the sun. The rays lasted about five minutes; their length being approximately 10°, and width 2°.

Position of Ship :—Latitude 23° 00′ N., Longitude 60° 00′ W.

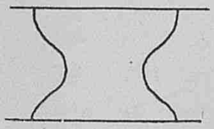
Note.—The observation of green rays after sunset is much rarer than that of the green flash at sunset. The green rays are referred to in the article on " The Green Flash at Sunrise and Sunset," Vol. XIII, 1936, page 55. Only two previous observations have been published in The Marine Observer.

REFRACTION AND GREEN FLASH AT SUNSET.

Melo Fjord, Norway.

The following is an extract from the Meteorological Record of S.S. *Arandora Star*. Captain E. W. Moulton. Tilbury to Iceland and Norway. Observer, Mr. G. C. Case.

23rd July, 1937, at about 10.25 p.m. at ship, the sun was observed to be setting over the open sea, considerable distortion and mirage being present. When first observed the sun appeared thus :—



and some minutes later (the rate of change of altitude being only 3′ per minute) the lower image set and the upper one remained, slowly decreasing in size, the upper horizontal edge remaining stationary.

Just before disappearing, the image turned vivid blue-green and remained so for a second or two. The distinctness of the green flash was such that I am convinced I have not previously seen it.

Twelve hours' fog had been experienced, clearing at 10.30 a.m.—12 hours before the sun set—and since then considerable distortion of distant objects had been observed.

Calm. Barometer 1002 mb. Air temperature : dry 67° F., wet 63° F. Sea 61° F.

Position of Ship :—Latitude 66° 46′ N., Longitude 13° 15′ E.

AURORA.

Baltic Sea.

The following is an extract from the Meteorological Record of S.S. *Dearne*. Captain T. H. Woodhead. Copenhagen to Goole. Observer, Mr. J. E. Clark, 2nd Officer.

On 30th September, 1937, at 2000 G.M.T., when leaving Copenhagen observed a brilliant auroral display. It consisted of a well-defined arc of light extending 100° along the horizon (N.W. by W. to N.E.), the sky below giving an appearance of heavy rain clouds. Extending skywards from the upper border of the arc were numerous rays of light, which were constantly varying in colour, the dominant colour was white, but red and green were often observed. During one period the whole sky between N. and N.E. was a fiery red. Towards midnight the arc became irregular, but it was not until 0200 G.M.T., 1st October, when the last of the display was observed in the form of arcs in motion rising rapidly in quick succession and disappearing high in the zenith.

Weather conditions were cloudless sky, excellent visibility.

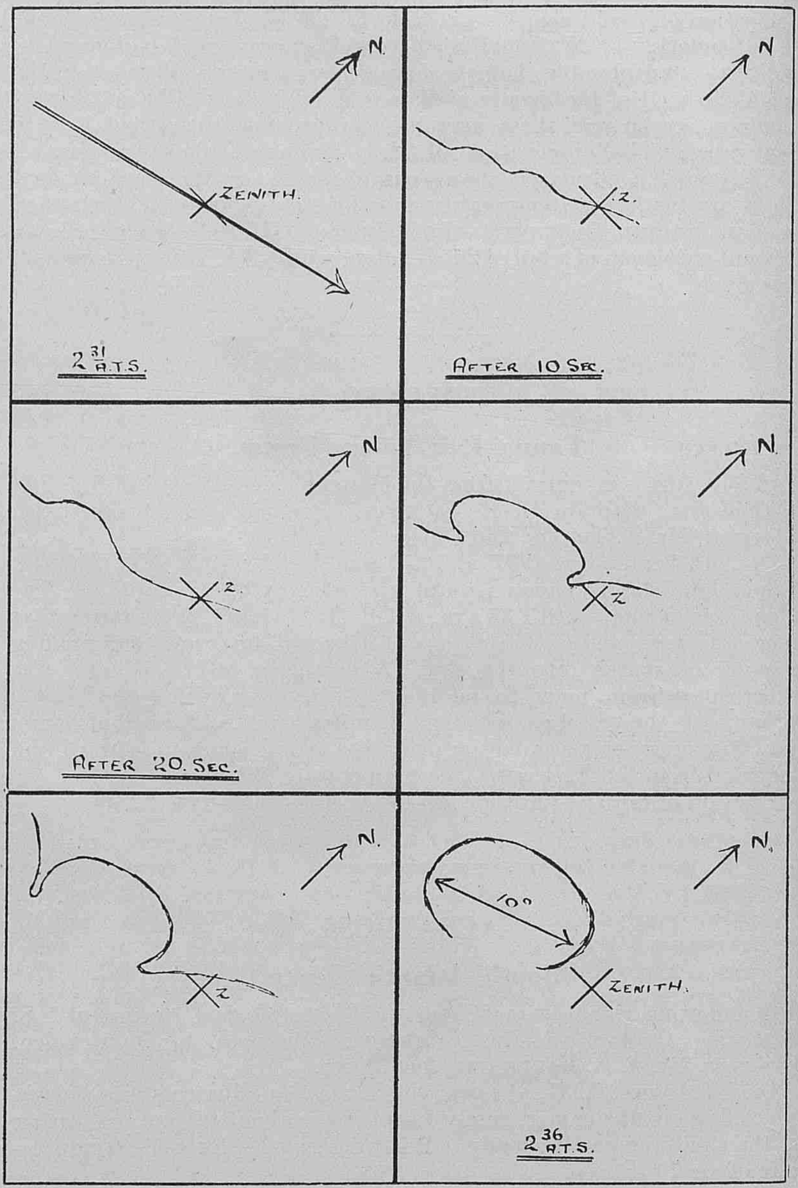
METEOR.

Red Sea.

The following is an extract from the Meteorological Record of M.S. *Orari*. Captain J. G. Almond. Aden to Suez. Observer, Mr. H. H. McKillican, 2nd Officer.

On 8th August, 1937, at 2.31 A.T.S. (0001 G.M.T.), a meteor passed across zenith with a flash of far greater brilliance than any lightning, leaving a trail to west of zenith, but only a faint and rapidly vanishing one to eastward. The light was white and the observer had the impression of an explosion. The trail lingered, forming into a crescent, as shown in sketch, until it finally vanished five minutes later.

Position of Ship :—Latitude 22° 30′ N., Longitude 37° 21′ E.



WEATHER FORECASTING AT SEA.

S.S. *Ormonde*. Captain A. E. Nicholls.

Observing Officer, Lieutenant R. B. Stannard, R.N.R., 2nd Officer.

The following remarks accompanied this weather chart :—

The chart is rather interesting. It is well known that the " Lows " experienced on this southern coast generally pass to the E.S.E. and S.E. on hitting the land ; this one apparently hit Adelaide. A force 10 wind with high sea and the ship shipping water over all in the Gulf of St. Vincent is very unusual. We had to wait three hours before getting into Outer Harbour, Adelaide. On the rather meagre ship reports it was hard to define where exactly the centre was situated, especially as Adelaide had sent out a gale warning stating the centre was situated *S.E.* of Kangaroo Island. I knew that was impossible with the weather and wind direction we were experiencing, so I sent out a " C.Q." warning that the centre was situated *S.W.* of the island, distance about 20 miles. I was lucky to be right.

Ormonde, 17/9/37.

35° 26′ S., 135° 33′ E. G.M.T. 1030. Course 090°, 16 knots. Bar. 996.0, falling; wind W.N.W. 10, cql.; heavy sea and w'ly swell.

An intense cyclonic disturbance situated to the S.S.W., distance about 30 miles, moving east.

This low must have approached from the S.W., as for the last two days wind has been N.W. to W.N.W. gradually increasing, barometer slowly dropping. Travelling about 400 miles per day.

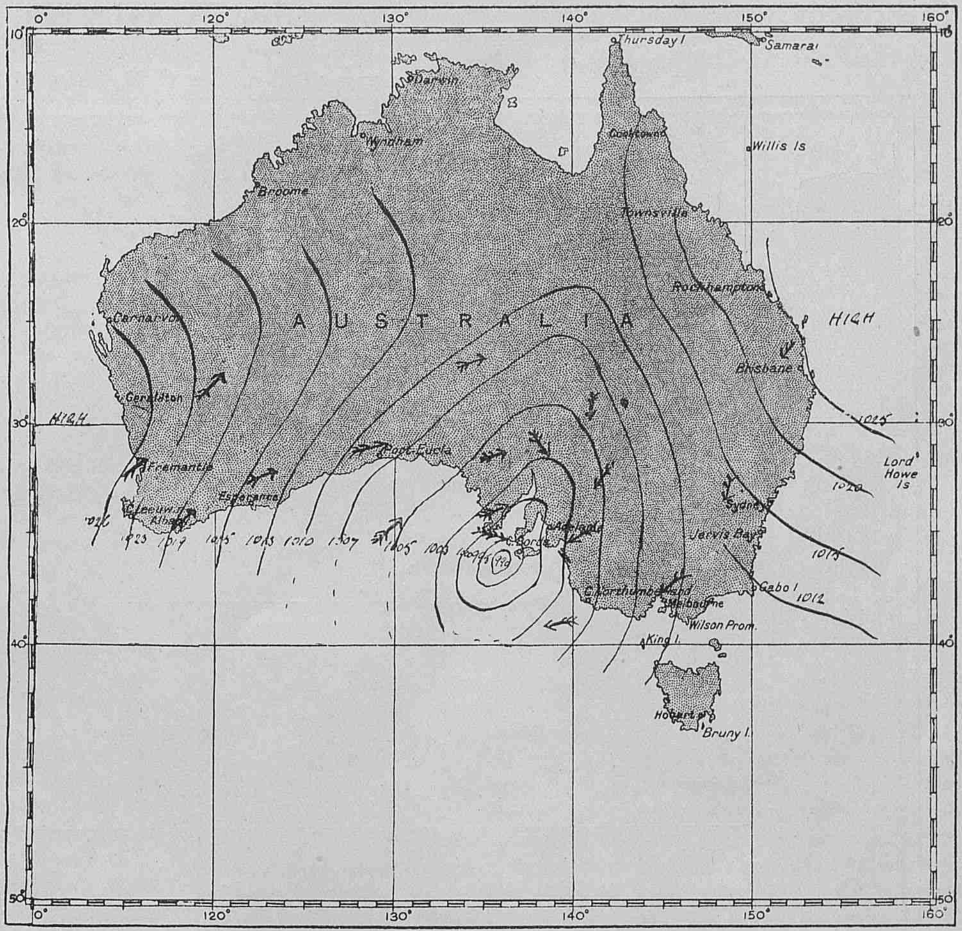
Wind should back to west and S.W. as the low should proceed to the S.E. on reaching the coast.

Later. Off Adelaide, G.M.T. 2030, 17/9/37. Wind W.N.W. 10; bar. 991.2 steady, oqlr.; heavy confused sea and swell.

The centre must have been about 20 miles S.S.W. still, having passed over Kangaroo Island.

Later. Adelaide, G.M.T. 0400, 18/9/37. Wind W. 7, cq.; bar. 1004.0, rising fairly quickly; sky clearing.

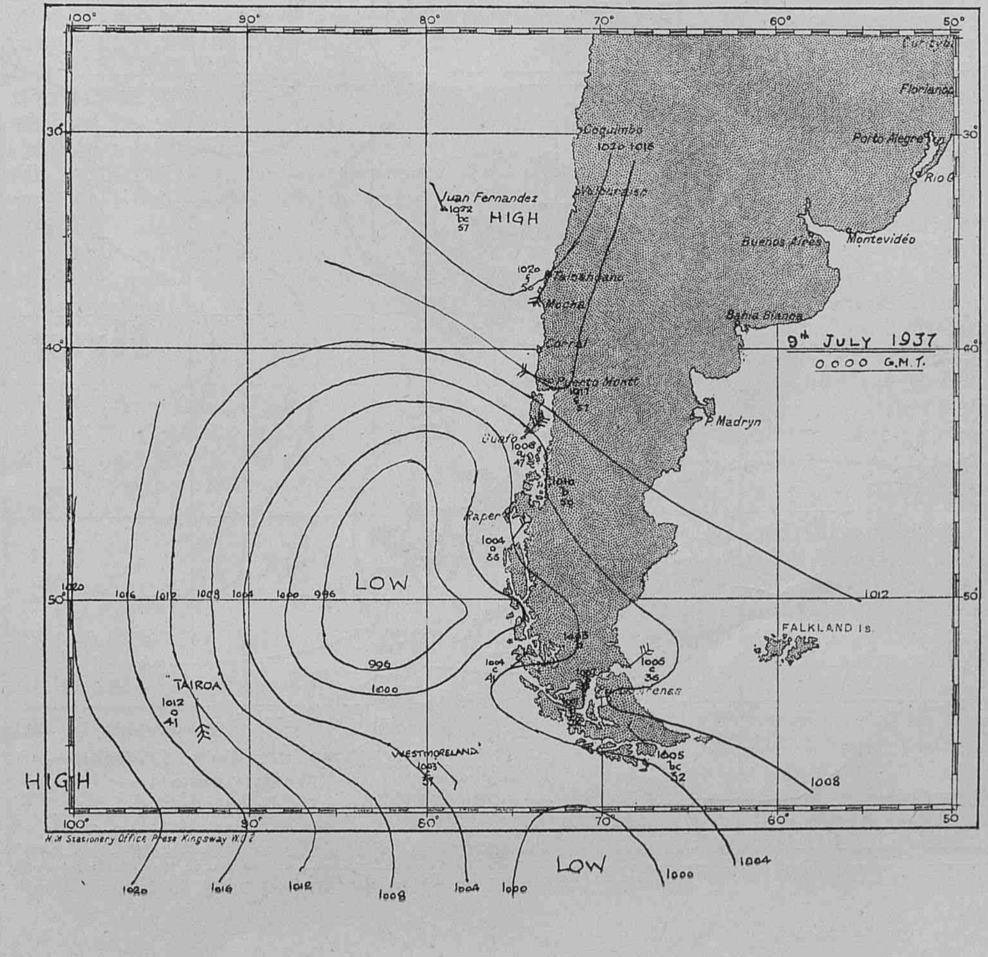
This was compiled from shore and ship weather reports.



120°
130°
140°
150°
160°
10°
20°
30°
40°
50°
Thursday I.
Samarai
Darwin
Wyndham
Cooktown
Willis Is
Broome
Townsville
Rockhampton
AUSTRALIA
HIGH
Carnarvon
Brisbane
Geraldton
HIGH
1015
Lord Howe Is
Port Eucla
Fremantle
Esperance
1020
Sydney
Albany
Adelaide
Jervis Bay
1015
1023
1017
1015
1013
1010
1007
1005
1000
Cape Northumberland
Melbourne
Gabo I.
1012
Wilson Prom.
King I.
Hobart
Bruny I.

South America (S.W. Coast).

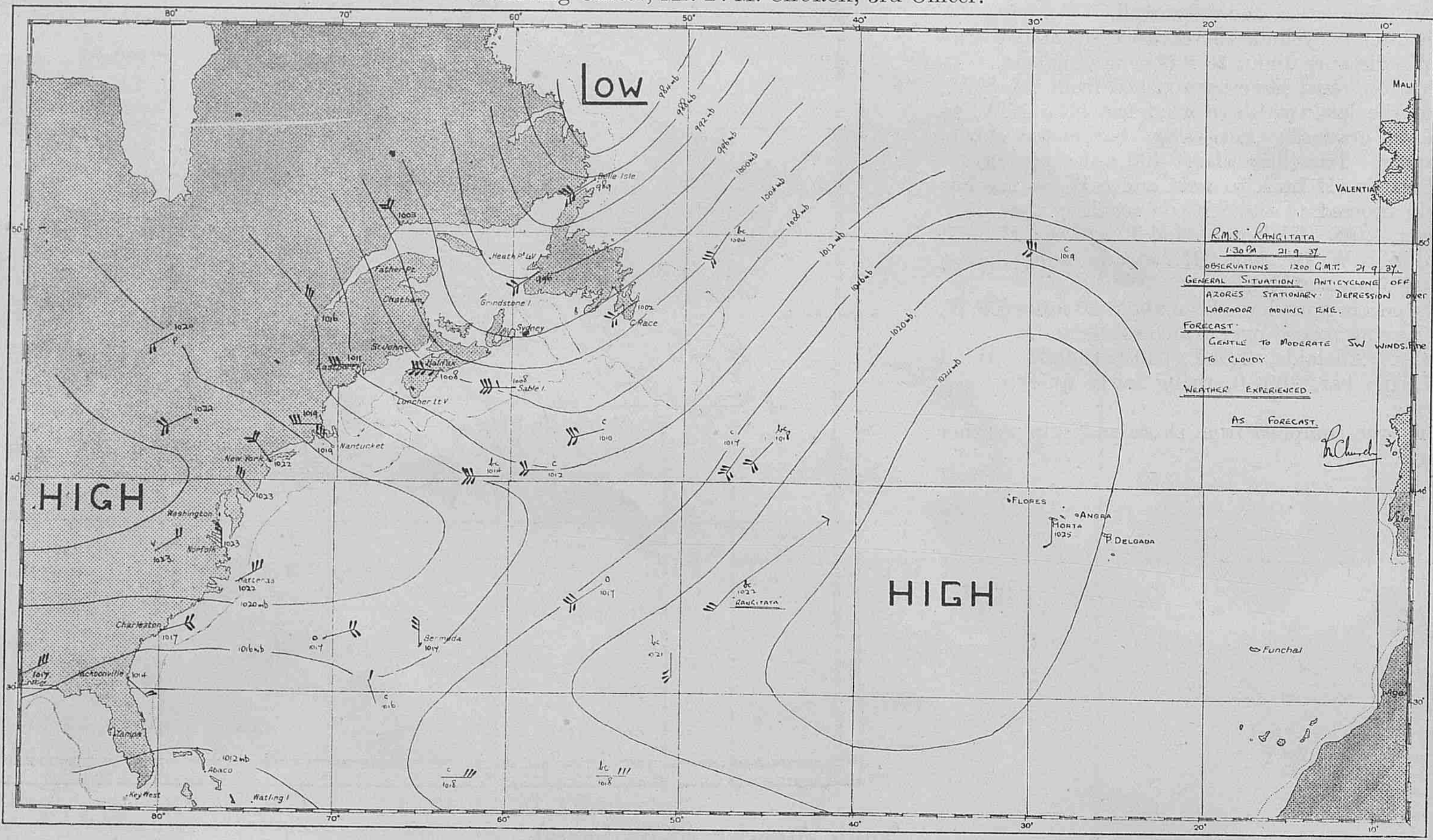
S.S. *Tairoa*. Captain W. H. P. Jackson.
Observing Officer, Mr. W. P. Burt, 3rd Officer.



100°
90°
80°
70°
60°
50°
30°
40°
50°
Curityba
Florianopolis
Coquimbo
1020 1016
Porto Alegre
Rio G.
Valparaiso
Juan Fernandez
1022
HIGH
Buenos Aires
Montevideo
Talcahuano
Mocha
Bahia Blanca
Corral
9th JULY 1937
0000 G.M.T.
Puerto Montt
Madryn
Guafo
Raper
LOW
1020
1016
1012
1008
1004
1000
996
1012
FALKLAND Is.
996
1000
"TAIROA"
1012
"WESTMORELAND"
1003
1005
1008
HIGH
H.M. Stationery Office Press Kingsway W.C.2
1020
1016
1012
1008
1004
1000
LOW
1000
1004

NORTH ATLANTIC

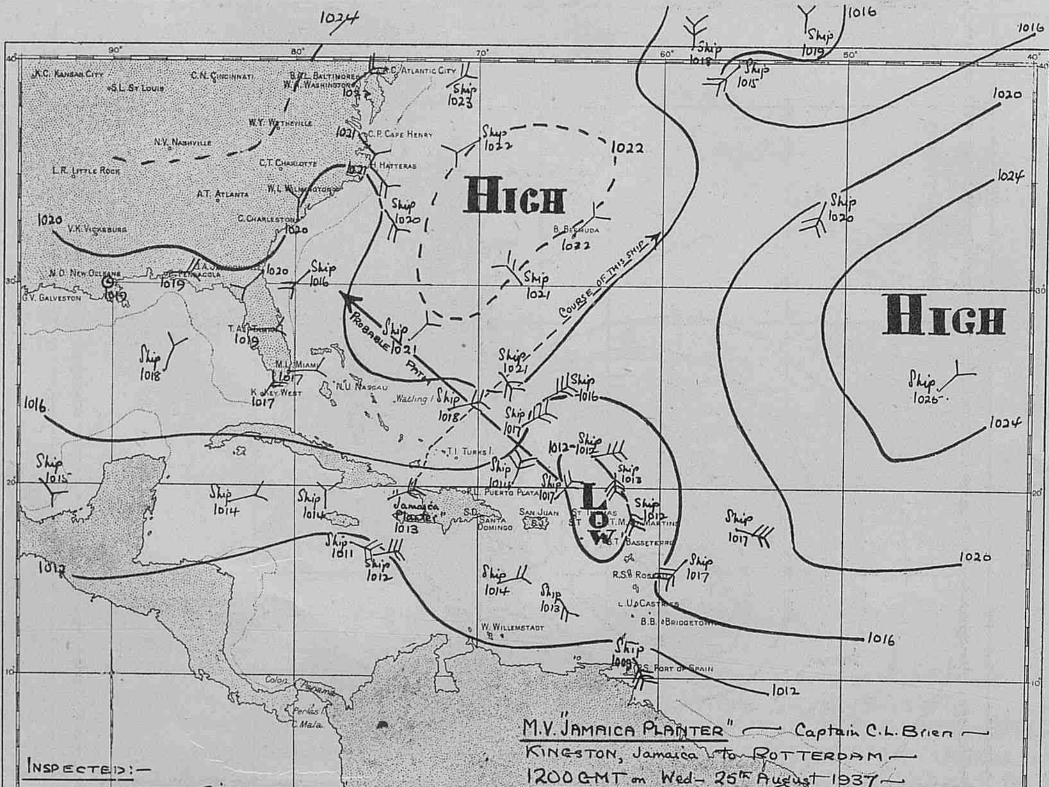
M.S. *Rangitata*. Captain E. HOLLAND.
Observing Officer, Mr. P. M. CHURCH, 3rd Officer.


LOW
HIGH
HIGH
Belle Isle
Heath Pt Lt V
Father Pt
Chatham
Grindstone I.
Sydney
C. Race
St John
Eastport
Halifax
Sable I.
Lurcher Lt V
Nantucket
New York
Washington
Norfolk
Hatteras
Charleston
Bermuda
Jacksonville
Tampa
Abaco
Key West
Watling I.
Flores
Angra
Horta
Delgada
Funchal
Valentia
Rangitata
988 mb
992 mb
996 mb
1000 mb
1004 mb
1008 mb
1012 mb
1016 mb
1020 mb
1024 mb

R.M.S. "Rangitata
1·30 PM 21 9 37
Observations 1200 G.M.T. 21 9 37.
General Situation: Anticyclone off Azores stationary. Depression over Labrador moving ENE.
Forecast:
Gentle to Moderate SW winds. Fine to cloudy
Weather Experienced.
As Forecast.
P. Church 3/o

North Atlantic (S.W. portion).

M.S. *Jamaica Planter*. Captain C. L. BRIEN.
Observing Officer, Mr. E. ALLEN, Chief Officer.


HIGH
HIGH
LOW
Course of this ship
Probable Path
K.C. Kansas City
S.L. St Louis
C.N. Cincinnati
B. Baltimore
W. Washington
A.C. Atlantic City
W.Y. Wytheville
N.Y. Nashville
C.P. Cape Henry
C.T. Charlotte
H. Hatteras
L.R. Little Rock
A.T. Atlanta
W.L. Wilmington
C. Charleston
V.K. Vicksburg
B. Bermuda
N.O. New Orleans
P. Pensacola
G.V. Galveston
T. Tampa
M. Miami
K. Key West
N.U. Nassau
Watling I.
T.I. Turks I.
Puerto Plata
Santo Domingo
San Juan
St Martin
Basseterre
R.S. Roseau
L.U. Castries
B.B. Bridgetown
W. Willemstadt
P.S. Port of Spain
Colon
Panama
Perlas I.
Mala
Jamaica Planter
Ship
1012
1016
1020
1022
1024

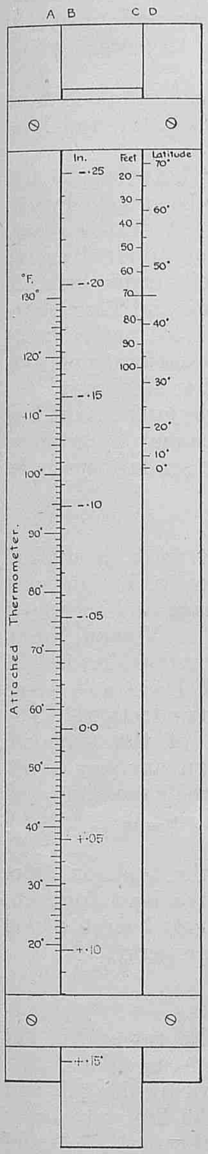
M.V. "JAMAICA PLANTER" — Captain C.L. Brien —
KINGSTON, Jamaica to ROTTERDAM —
1200 GMT on Wed— 25th August 1937 —
A tropical disturbance is indicated near the Leeward Isles, of apparently slight intensity. Since this vessel will cross its likely path caution is advised in view of the possibility of the system developing. E.A. c/o.

Inspected:—
C. L. Brien
Master.

A SIMPLE BAROMETER CORRECTION SLIDE.

By Mr. J. O. H. Kirkwood, 4th Officer S.S. *Otranto*.

Captain L. V. James, D.S.C.



A simple slide constructed by the writer out of cardboard was found to be of great assistance in obtaining, quickly and accurately, the necessary correction to the ship's mercurial barometer.

This barometer is of the B.O.T. pattern and graduated in inches, but the slide could as easily be made to provide corrections for millibar readings.

The general principle of the Gold Slide is followed, except that it is used separately, and not attached to the barometer.

The diagram shows the general arrangement. A basis of 30.00 inches was taken and the instrument had no Index Error.

A scale of 1/16 inch to 1° F. was found convenient, and this, commencing at the bottom at 20°, was graduated on scale "A" and used as a basis for the other scales.

With the slide set centrally, a line was drawn on scale " C " (mean height of barometer taken as 70 feet) corresponding to a line on scale " D," Latitude 45°.

Values of correction were now computed by combining Tables III and IV (Marine Observers' Handbook, 1937, Appendix I) for each degree of temperature and using the 70 feet height.

Scale " B " was now graduated with a mark at each .01 inch of correction, corresponding to the values of temperature as computed. Plus values were in red and minus in black.

The slide is now adjusted for every 5° of Latitude to provide the necessary plus or minus corrections as indicated by Table V and scale " D " graduated with a mark opposite the 70 feet at each position. It will be found that Latitude 0° is at the bottom and 70° at the top of scale " D."

Corrections for variation of height are graduated on scale " C," after adjusting the slide to give additional corrections found from Table IV marks being made opposite Latitude 45°. The lower heights will be found at the top of this scale.

To obtain any correction, set the height of barometer opposite the latitude in, and read off the correction opposite the temperature of attached thermometer.

Construction.

The fixed portion of the slide is made by glueing two strips of cardboard 5/8 inch and 7/16 inch to a backing 1 15/16 inches wide and leaving a space 7/8 inch wide between for the sliding scale.

Two straps are fixed across at top and bottom to keep the sliding strip in place, and four paper fasteners put through, to keep anything from coming unstuck.

THE GREAT TYPHOON AT HONG KONG, SEPTEMBER 1st TO 2nd, 1937.

A Report by the Officer Administrating the Government of Hong Kong received through the Colonial Office.

On 1st September, 1937, at 12.35 a.m., the No. 1 typhoon signal was hoisted—(" A depression or typhoon exists which may affect the locality.") This was followed at 3.20 p.m. by the No. 5 signal—(" Gale expected from the N.W.")—and at 1.58 a.m. on 2nd September the No. 10 signal was hoisted—(" Wind of typhoon force expected : any direction.")—and the warning maroons were fired.

The centre of the typhoon passed about ten miles to the S.S.W. of the Royal Observatory at 3.40 a.m. on a W.N.W. track. By 6 a.m. the wind had veered to S.E. by S. At 6.20 a.m. No. 8 signal—(" Gale expected from S.E.")—was hoisted, and finally lowered at 10.40 a.m. The typhoon had by this time entered the coast and filled up to the N.W. of Macau.

From 8 p.m. on 1st September to 3.40 a.m. on 2nd September the barometric pressure fell 1.33 inches; the minimum reading during the passage of the typhoon being 28.298 at 3.40 a.m. At the Royal Observatory several wind gusts in excess of 125 m.p.h. were recorded between 3.15 and 4.00 a.m. on 2nd September. A reading of 125 m.p.h. was the limit of the instrument. But at the Hong Kong Electric Company's Generating Station a gust of 167 m.p.h. was recorded at 3.30 a.m. on an instrument which the Director, Royal Observatory, regards as accurate. 2.15 inches of rain fell between 4 a.m. and 5 a.m., and 5.5. inches between 10 p.m. 1st September and 10 a.m. 2nd September. Details of the hourly barometric pressure, wind direction and velocity, and rainfall are appended.

Communications.

All communications, with the exception of wireless and certain telephone services, ceased during the actual passage of the typhoon over the Colony. By 1.30 a.m. on 2nd September ferries across the harbour, trains, buses, taxis, rickshaws and private vehicles had stopped. The following morning, when the wind had abated, the ferries and buses were the first to resume a skeleton service. Fallen trees blocked the passage of private vehicles on the main roads, the Peak Tramway was impassable in two places, and the permanent way of the Kowloon–Canton railway was seriously damaged between Sha Tin and Taipo. By noon, with the exception of the railway, the normal services had been resumed, but roads on the higher levels were still blocked either by trees, landslides or boulders, and many telephone lines were broken. Twelve telephone poles were blown down on the few miles of road from Stanley Gaol to Island Road.

At Kai Tak Airport the landing light and aerials were carried away, and at Hung Hom Wireless Station the short-wave air service antennæ were destroyed.

The destruction of two bridges and a length of road rendered both roads to Tai Po practically impassable for two days, and telephonic communication with New Territories, Northern District, was resumed only after a similar period. The cables connecting the islands of Lan Tau and Cheung Chau with Hong Kong have not yet been repaired.

European Private Properties.

The damage to European private properties was less, perhaps, than might have been expected. The public had ample warning of the approach of the typhoon and in most cases were adequately prepared. Many roofs, particularly on the higher levels, were stripped of their tiles, windows were dashed in, street signs wrecked and cars were overturned; but these caused no casualties.

Bathing matsheds and huts, largely the property of Europeans, at Repulse Bay, Stanley and the mainland beaches, were destroyed or wrecked by a combination of the wind and the abnormally high tide. On the island beaches 121 bathing matsheds were blown down.

Chinese Private Properties.

The Chinese community did not escape so lightly. The flimsier construction of lathe, plaster and cement, and houses in an overdue state of repair offered little resistance to a wind-force of over 150 m.p.h.

In the town itself three houses collapsed in Western Street, Centre Street, and in Third Street, where one death and five minor casualties resulted. Rice stocks in Connaught Road, valued at $100,000, were soaked and ruined. In Gloucester Road the outside walls of two houses, the property of Japanese, caved in. In Shaukiwan two adjoining houses were destroyed, and nearly every house on the sea front sustained some damage.

Both on the island and in Kowloon, however, it was the dwellings of a humbler type which suffered most heavily. The " matshed " and the brick hut of the coolie class were rarely immune; but although the damage to property of this description was almost universal, reports indicate that in the town itself it occasioned not more than two or three deaths. A landslide, which enveloped an unnumbered hut in Shaukiwan, caused one of these.

Commercial and Crown Properties.

The damage suffered by commercial properties and the public utility companies was of a similar nature. The south side of the Hong Kong Rubber Factory, a temporary market in Wong-nei-chung and the Public Works Department Electrical Workshop in Arsenal Street all collapsed. Two Chinese were killed near Bay View by falling electric wires. The Tung Tai Engineering Company's premises in Whitfield Road were damaged to the extent of $3.000. The street lamps bordering Causeway Bay were all either beaten down or twisted into tangled shapes.

Temporary dwellings of contractors on the sites of their enterprises were uprooted, and the Chinese bathing pavilions along the North Point shore were totally wrecked. Windows, doors and roofs were broken in at the Diocesan Boys' School and at the Central British School. The roof of a garage in Nathan Road, Kowloon, fell in. Repairs to this and to the offices affected are estimated at $4,000.

The yacht *Shenandoah* cut adrift from her moorings and crashed into the sea-wall belonging to the China Light and Power Company at Tai Wan. This resulted in the failure of the Kowloon electricity supply for about an hour during the height of the typhoon. $1,000 worth of damage was done to the wharf. The premises of Bailey's Shipyard, China Import and Export Lumber Company, Far East Oxygen and Acetylene Company and the Chung Wah Book Company also suffered considerable losses.

Wharves and Piers.

All wharves and piers were exposed to the pressure of the rising tides from beneath and to the force of the wind and driving seas from above, and few escaped without some damage. Displacement of beams on the jetties extended the delay in resumption of the ferry service across the harbour, but by 10 a.m. temporary repairs had been successfully effected. Many of the piers along the western praia where the sea was roughest will have to be completely rebuilt. All lighthouses continued to function throughout the typhoon with the exception of Cheung Chau light and beacon which were washed away.

Kowloon-Canton Railway.

The principal damage to the Kowloon–Canton railway was caused by a tidal wave which swept inland from Tolo Harbour, demolishing the granite-pitched banks on its edge and leaving the rails and sleepers hanging over the sea. The manager of the railway in his report stated that more damage was caused when the wave receded than when it approached, and that its maximum height was approximately 30 feet. There were three main banks, composed of earth pitched with granite, demolished by the wave. The height of each was 25 feet, and their length 1,200 feet, 500 feet and 300 feet respectively. In all, between Shatin and Taipo Market, a distance of seven miles, there were 21 bank slips, totalling 6,000 lineal feet.

Repair work was started on the morning of 2nd September as soon as the full force of the gale had abated. Work proceeded night and day for eight days, and on the evening of 10th September a ballast train was able to pass over the damaged section. To effect these repairs an average of 1,000 labourers was at work each day and each night.

Through passenger trains, between Kowloon and Canton, one in each direction, were allowed to run on 11th and 12th September. The journeys took only 35 minutes longer than the usual schedule. On 13th September the normal train service was resumed with speed restrictions in certain places which increased the time of the total journey by 11 minutes. It is expected that these restrictions will be removed early in October.

Native Craft.

The destruction on land was relatively small compared with that which befell the vast floating population. The typhoon shelters provided refuge for many junks and smaller craft. But great numbers were unable to reach these shelters, and there is evidence that in a few cases the preliminary warnings were ignored.

One, Leung Kwai Yau, the representative of the Salt Fish Dealers in Shaukiwan, reported that a few days before the typhoon 52 fishing junks left Shaukiwan and proceeded to the fishing grounds. A few members of the crews of some ten of these junks were saved, and reported the loss of their fleet at the Water Police Station. It can only be assumed that over 1,000 lives were lost.

At Aberdeen several junks, with the veering of the wind from N.E. by E. to S.E. by E. at 4 a.m., broke from their moorings and were driven out to sea. Sampans were washed ashore on to Island Road. At Bay View between 200 and 300 sampans and junks sank or drifted away. At Shaukiwan many sampans were battered to pieces against the sea-wall.

On the sea front around Kowloon 693 junks and sampans were wrecked or flung ashore—a presumed damage of $96,245—and it is certain that there were numerous unreported casualties.

In the island of Cheung Chau it is estimated that between 250 and 300 people lost their lives. Twenty-five bodies have been picked up in the harbour and in various bays around the island. At Tai O $3,000 worth of damage was done to junks and boats. One hundred native craft were destroyed at Shau Tau Kok, and reports of varying losses in a lesser degree were received from Sha Tin, Sai Kung and Ping Shan.

The Harbour Office has information of a total of 1,361 native boats being sunk, of which many were junks with from five to twenty persons on board, and of lesser damage being done to a further 600 boats.

When it is considered that the wrecking of a single junk meant loss of home and of livelihood to several families, some idea may be obtained of the havoc which the typhoon wrought among these sea-faring people.

Steamers.

A map showing position of liners and steamers sunk or washed ashore is appended. Some of these will be total losses, but in most cases efforts are still being made to repair the damage and to refloat the ships. It has been reported that the engines of Nippon Yusen Kaisha's *Asama Maru* are to be removed in order to reduce her weight in anticipation of the next high tide. The Lloyd Triestino's *Conte Verde* is now in dock, but the extent of her damage is undeclared. The harbour was exceptionally crowded on the night of the typhoon, there being 101 ships in port as compared with an average of 40. Considerable damage was caused by ships dragging their moorings and drifting helplessly before the wind. Police launches Nos. 6, 7, 8 and 9 were all damaged.

Apart from the general and expected havoc of the typhoon there were two localized incidents which were not to have been foreseen, and, occurring as they did when the storm was at its height, added considerably to the total loss of life and damage to property.

Fire at West Point.

The first of these was a disastrous fire which broke out at No. 134 Connaught Rooms West and spread to the adjoining houses (Nos. 135–139). The Fire Brigade were hampered in their work by the gale and heavy seas, and while the bodies recovered from the fire were being piled up in the roadway, the waves leapt up over the praia wall and snatched them back into the sea. Thirty-two people were reported dead or missing during the fire.

Tidal Wave at Taipo.

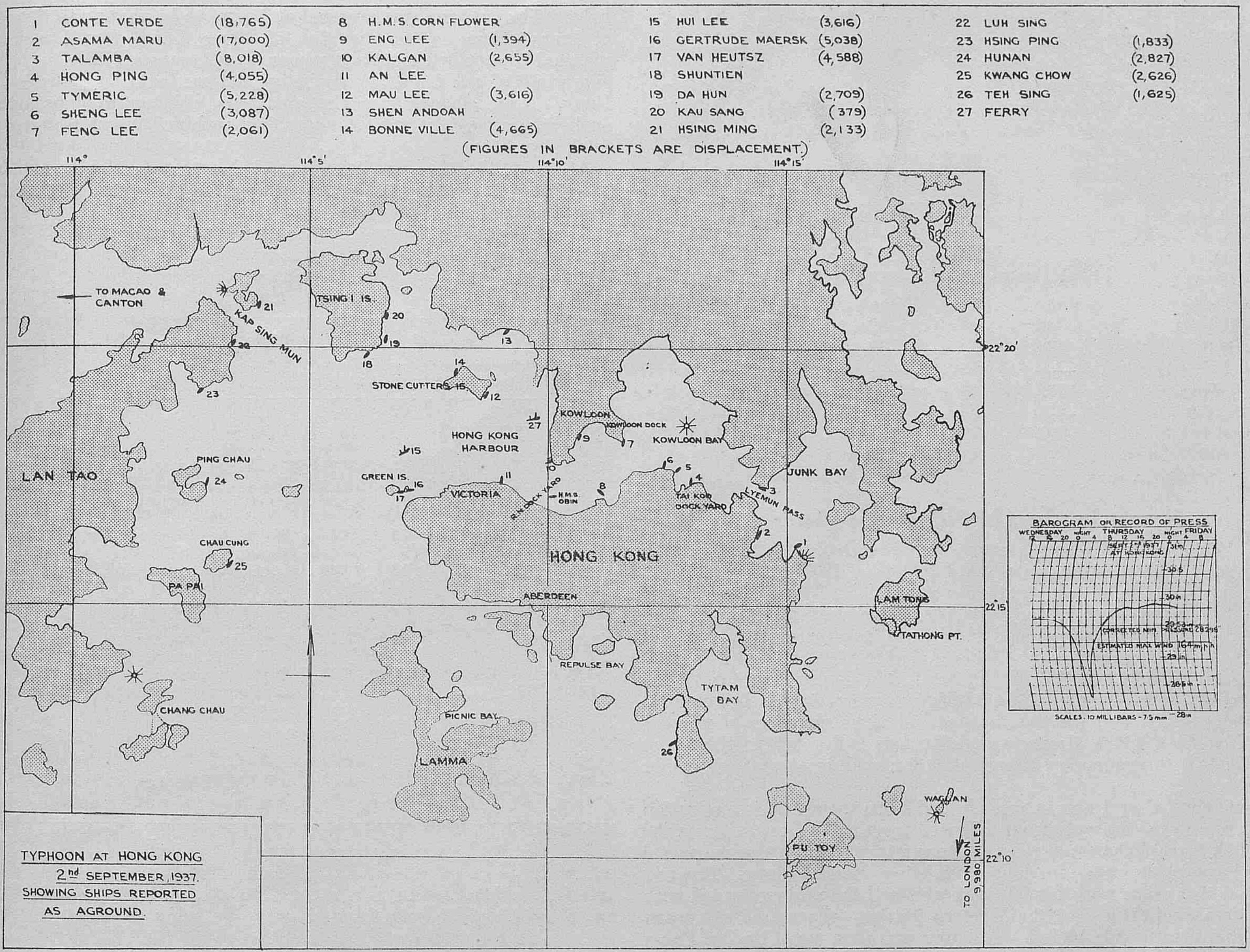
The second incident was the tidal wave which swept into Tolo Bay harbour shortly after 3 a.m., up the entire length of the narrow inlet, devastated Taipo Old Market and continued inland for a quarter of a mile. The average height of the wave was between 5 and 7 feet. The Manager of the Railway estimates that at one point it rose to a height of 30 feet. Houses were demolished, stores of food and clothing were ruined, fields were inundated and livestock drowned. The wave alone was probably responsible for some 150 deaths.

Airport.

At Kai Tak Airport a section of the hangar roof was blown away and windows were smashed. The floodlight was demolished and all wireless masts were blown down. The slipway and the Pan-American Airways pontoon and terminal building were wrecked.

Military Property.

The Military Authorities suffered minor damage at all barracks and in Kowloon all matsheds and the Marina Camp were swept away. But at Mount Austin barracks £4,000 worth of damage was done, six married soldiers' quarters and one officer's quarter being rendered uninhabitable.


1 CONTE VERDE (18,765)
2 ASAMA MARU (17,000)
3 TALAMBA (8,018)
4 HONG PING (4,055)
5 TYMERIC (5,228)
6 SHENG LEE (3,087)
7 FENG LEE (2,061)
8 H.M.S CORN FLOWER
9 ENG LEE (1,394)
10 KALGAN (2,655)
11 AN LEE
12 MAU LEE (3,616)
13 SHEN ANDOAH
14 BONNE VILLE (4,665)
15 HUI LEE (3,616)
16 GERTRUDE MAERSK (5,038)
17 VAN HEUTSZ (4,588)
18 SHUNTIEN
19 DA HUN (2,709)
20 KAU SANG (379)
21 HSING MING (2,133)
22 LUH SING
23 HSING PING (1,833)
24 HUNAN (2,827)
25 KWANG CHOW (2,626)
26 TEH SING (1,625)
27 FERRY
(FIGURES IN BRACKETS ARE DISPLACEMENT)
114°
114°5'
114°10'
114°15'
22°20'
22°15'
22°10'
TO MACAO & CANTON
KAP SING MUN
TSING I IS.
STONE CUTTERS IS.
KOWLOON
KOWLOON DOCK
KOWLOON BAY
HONG KONG HARBOUR
GREEN IS.
VICTORIA
R.N. DOCK YARD
H.M.S. OBIN
TAI KOO DOCK YARD
LYEMUN PASS
JUNK BAY
LAN TAO
PING CHAU
CHAU CUNG
PA PAI
HONG KONG
ABERDEEN
LAM TONG
TATHONG PT.
REPULSE BAY
TYTAM BAY
CHANG CHAU
PICNIC BAY
LAMMA
WAGLAN
PU TOY
TO LONDON 9,980 MILES
BAROGRAM OR RECORD OF PRESS
WEDNESDAY NIGHT THURSDAY NIGHT FRIDAY
12 16 20 0 4 8 12 16 20 0 4 8
SEPT 2nd 1937 AT HONG KONG
31in
30.5
30in
29.53in
CORRECTED MIN PRESSURE 28.298"
ESTIMATED MAX WIND 164 m.p.h.
29 in
28.5in
28in
SCALES. 10 MILLIBARS - 7.5 mm

TYPHOON AT HONG KONG
2nd SEPTEMBER, 1937.
SHOWING SHIPS REPORTED
AS AGROUND.

Six barracks roofs were badly damaged. Command Headquarters estimate their losses at £6,500.

Naval Property.

H.M.S. *Suffolk* and one destroyer damaged several plates when a drifting steamer swung into them. They are now in dock with repairs nearing completion. The damage to the Naval Yard was of a minor nature but extensive. The naval hospital suffered heavily.

The speed and efficiency with which normal conditions were resumed after the typhoon was remarkable. Water and gas supplies were not affected. Telephone and electric services were impeded not more than a few hours.

The typhoon came at a time when the cholera epidemic was near its height and when every available hotel and house were filled with refugees from Shanghai. There was no serious damage reported from either of the refugee centres.

Cost of Crown Losses.

Shore damage was, as usual, largely superficial, but in the aggregate, very great. The Public Works Department estimate the total cost of the damage done to Crown property at $616,771.00 of which $456,421.00 will have to be expended during the current year.

Lives Lost.

The casualties actually reported by 14th September, 1937, were 548 deaths of which only one was a European—the master of a Chinese river steamer. But of the floating population no accurate account can be given. The Harbour Master suggests 11,000 as a probable figure. It is certain that thousands were drowned and the the number of deaths reported bears little relation to the lives actually lost as a direct result of the typhoon.

Appended.

List of barometric pressures, wind directions and velocity, and rainfall.

List showing cost of damage to Crown property.

List showing total number of casualities.

Report by Chief Preventive Officer.

Map showing position and tonnage of steamers.

Royal Observatory.

Date and Time.	Pressure at M.S.L.	Wind (mean hourly values)		Rainfall (d =drizzle)
		Direction.	Velocity.	
	ins.		m.p.h.	ins.
Sept. 1 20 h.	29.628	N. by W.	11	d
21 ...	.607	N.N.W.	15	d
22 ...	.577	N.N.W.	16	d
23 ...	.527	N. by W.	21	0.02
24 ...	.461	N.N.W.	22	0.03
Sept. 2 1 ...	.348	N.W. by N.	22	0.26
2 ...	.102	N.N.W.	37	0.58
3 ...	28.729	N. by W.	64	0.25
4 ...	.379	N.E. by E.	68	0.03
5 ...	.937	S.E. by E.	64	2.15
6 ...	29.339	S.E. by S.	46	0.50
7 ...	.509	S.E. by S.	38	1.20
8 ...	,640	S.E. by S.	36	0.38
9 ...	.701	S.E. by S.	29	0.24
10 ...	.762	S.E.	24	0.25

Cost of Damage to Crown Property.

	Total. $	Estimated Expenditure 1937. $
Hong Kong	361,371.00	264,221.00
Kowloon	71,400.00	44,700.00
New Kowloon	58,700.00	33,800.00
New Territories	125,300.00	113,700.00
	$616,771.00	$456,421.00

Total Number of Casualties.

	Males.	Females.	Children.
Killed	43	82	66
Drowned	130	103	124
Total ...	173	185	190
Injured	22	2	2

(Sgd.) F. E. Booker,
Chief Inspector.

14th September, 1937.

Report by the Chief Preventive Officer.

The following is a short account, as requested, of the events in connection with the typhoon of 2nd September, 1937.

About 3.30 a.m. on that date Revenue Officer Ward observed the S.S. *An Lee* being driven towards the Praya near the Imports and Exports Office. He telephoned to me and, together with a party of police officers (Sub-Inspector Goddard, Lance Sergeant A. 95 J. Hayward, Lance Sergeant A. 170 W. Scott and Lance Sergeant A. 183 R. Davies) and Revenue Officer Ellis, we succeeded in bringing 32 members of the crew of the *An Lee* and eight members of the tug *Tai Koo Kuai* to the Imports and Exports Office, where they were provided with temporary accommodation and treatment of minor injuries.

Some time after 4 a.m. it was decided to carry out an investigation of conditions on the waterfront. Roped together, we got as far as the Winglok Street Wharf and removed to safety several persons marooned on wharves who were in danger of being washed away. Progress beyond that point was deemed impossible and the party returned with considerable difficulty to the Western Market—the water was waist high and occasionally higher. A detour was then made by Des Vœux Road Central in order to escape the full force of the wind but even there some of the party were blown over by some violent gusts. Unfortunately the scaffolding around the Imports and Exports Office had collapsed during our absence and the last few yards of the journey proved to be the most tedious. Except for a few minor bruises, however, the whole party was lucky to escape without any serious injury.

(Sgd.) W. J. Buller,
Chief Preventive Officer.
9/9/1937.

S.S. "Corfu."

The following remarks and photographs were received with the Meteorological Record of S.S. *Corfu*. Commander J. H. Biggs, R.D., R.N.R. London to Yokohama. Observer, Mr. J. S. Sutherland, 4th Officer.

The typhoon was first detected over the Pacific to the east of Luzon on 28th August, 1937. Weather reports were received from shore stations on 30th and 31st August, giving us the approximate position, intensity, direction and rate of travel. However, it was only on the morning of 31st August, when it was situated over the eastern end of the Balingtang Channel, that its position was known with any certainty. At that time a trough of low pressure extended from Indo-China to the Carolines, while pressure was high over Japan and the neighbouring seas—a likely sign it would move W.N.W., as later proved to be the case.

On the morning of 1st September, as we were making Hong Kong, the sky to the eastward was very red, the wind W.N.W., force 2, accompanied by a low long easterly swell, being a sure indication of a depression not far distant. As we berthed alongside No. 2 Wharf, Kowloon, No. 1 typhoon signal was seen hoisted at the Observatory.

During the afternoon the weather became overcast and gloomy, the sky being hidden by heavy cumulus and cumulo-nimbus clouds—but the barometer remained steady at 29.80 in. with the wind westerly, light. The typhoon was reported at 5 p.m. to be passing to the north of Pratas Shoal in the direction of Hong Kong. By then it was reasonably certain that the typhoon would pass sufficiently near to give winds of gale force. At 6 p.m. we left our berth and proceeded to Buoy "A.18," shackling on the port cable. Numerous ships took up anchorage around us, while quite a few anchored in the harbour and Junk Bay.

At 7 p.m. the wind was west, force 3, barometer 29.64 in., and from this time the wind began to veer and gradually increase in force and the barometer fall at an increasing rate.

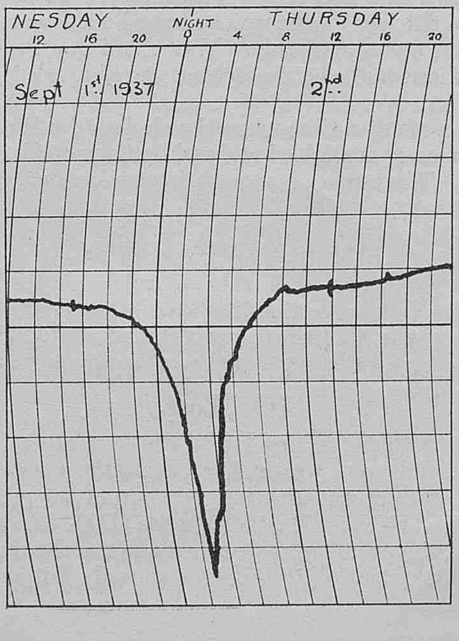
At midnight, the Royal Observatory, Hong Kong, issued "No. 10 typhoon signal"—our observations at and from that time being as follows:—

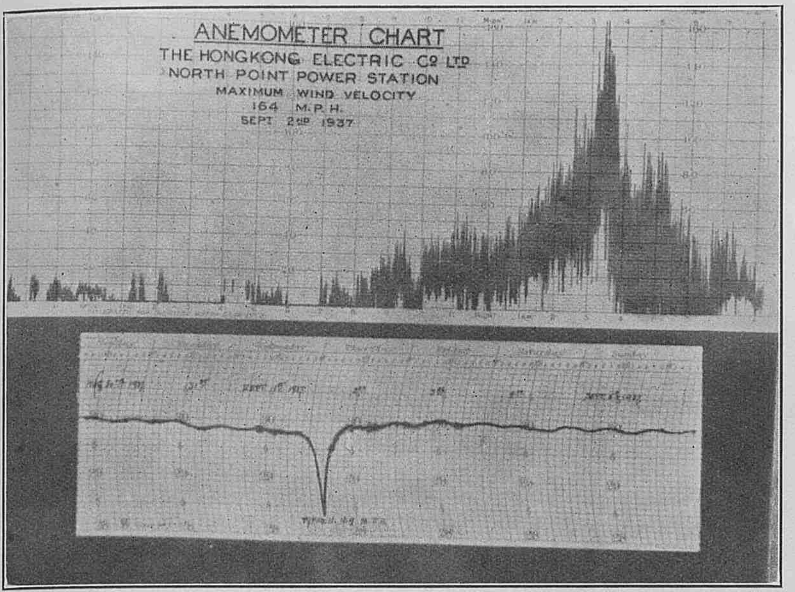
2nd September.

Time.	Wind.		Barometer.	Remarks.
	Direction.	Force.	in.	
0000	N.N.W.	5	29.47	Overcast weather. Occasional rain squalls.
0100	N.W. by N.	6	29.35	
0200	N.W. by N.	8	29.17	Violent squalls of N.W. wind, force 8–9.
0300	N. by W.	10	28.82	Squalls of hurricane force, with torrential rain.
0330	N.	12	28.35	Severe typhoon weather. Torrential rain.
0400	N.E. by E.	12	28.38	Continuous squalls of hurricane force. Vivid lightning.
0500	E.	12	28.75	Severe typhoon weather. Torrential rain.
0600	S.E.	12	29.28	Continuous squalls of hurricane force Vivid lightning.
0700	S.E.	11–9	29.50	Typhoon conditions easing.
0800	S.E. by S.	8	29.63	Continuous wind squalls of gale force, accompanied by continuous rain.
0900	E.S.E.	6	29.75	
1000	E.S.E.	5	29.77	
1100	S.E.	4	29.79	
Noon.	S.E. by S.	4	29.78	Overcast weather. Occasional rain squalls.

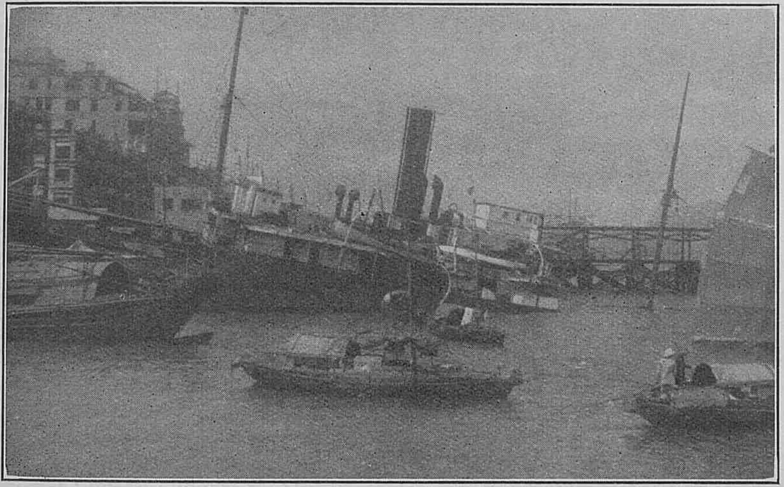
At 0116, we commenced manœuvring by engines as required—to relieve strain on cables—and at 0255 the starboard anchor was let go and port cable eased. This seemed to steady the ship somewhat, and at 0305 engines were rung off—the ship being steered all the time to keep her from yawing.

As indicated by the barograph and barometer the trough passed shortly after 0330. The wind seemed considerably higher between 4 and 5 a.m.; but on reading the Hong Kong Electric Company's Anemometer Chart, wind squalls from 3.30 to 3.40 were never below 60 and reading a maximum velocity of 164 m.p.h., whereas between 4.30 and 4.45 wind squalls of 98 m.p.h. were striking the ship between periods of a dead calm (from Anemometer Graph), which probably made them seem much more severe. It was not until after daybreak





that the wind showed any signs of abating. Visibility during the passing of the centre and for some considerable time afterwards was practically nil. Two ships were observed drifting past in close proximity—obviously out of control.



At daybreak no less than eight ships could be seen stranded from where we lay. Some of them were refloated and at least four remain ashore at the time of writing. Altogether 27 ships stranded during the typhoon. Not until 0900, when conditions had eased considerably, did any rescue work begin.

We left our moorings during the afternoon and berthed alongside No. 2 Wharf, approximately 24 hours after leaving same.

S.S. "Ranpura."

Also, accompanying the Meteorological Record of S.S. *Ranpura*, Captain J. M. Legg, Observer, Sub-Lieutenant C. J. Collingwood, R.N.R., 4th Officer, were the following remarks and photographs. The photographs were taken by Mr. G. Randall, 2nd Officer, as *Ranpura* left Hong Kong on 4th September, 1937.

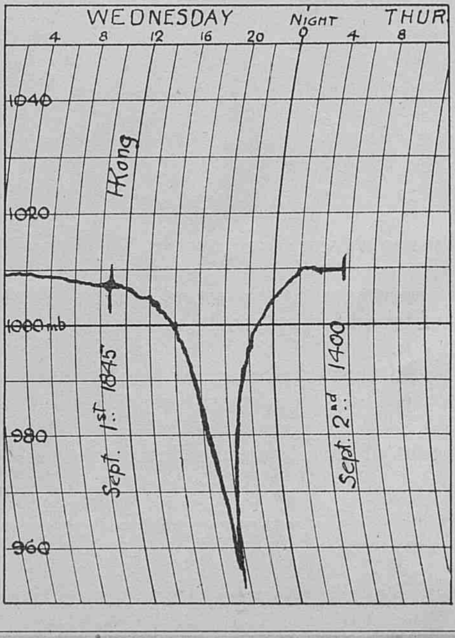
We left Kobe on 28th August, 1937, bound for Hong Kong. The following day a Typhoon was reported to be within 60 miles of Latitude 16° N., Longitude 130° E. From the daily weather reports we trace the Typhoon proceeding in a north-westerly direction, and on the 31st it was approaching the Balingtang Channel.

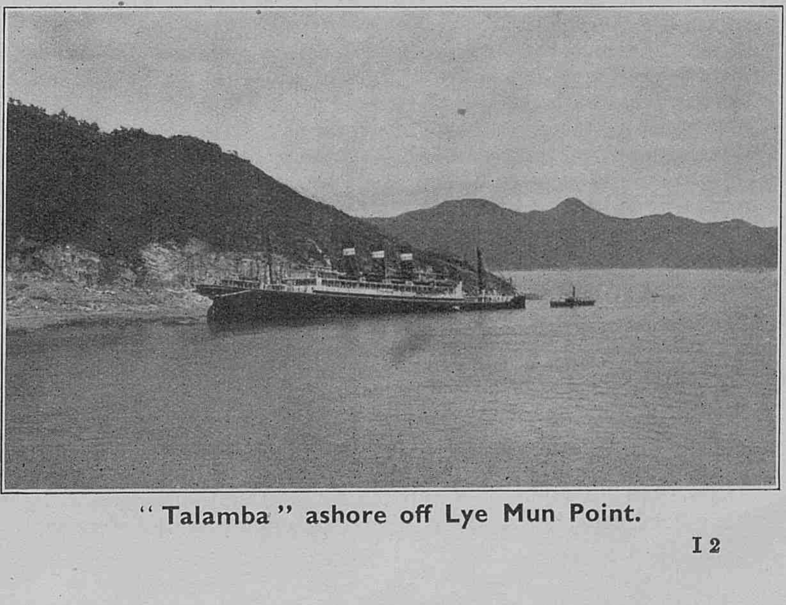
On arrival at Hong Kong the next day we observed Typhoon Signal No. 1 flying, the position indicated being approximately Latitude 20° N., Longitude 119° E. In the early afternoon the storm was reported to be off Pratas Island heading straight for Hong Kong, and on receiving this information the Commander decided to leave the wharf for Kowloon Bay. We proceeded to the anchorage at 5 p.m., the weather at the time being generally overcast with light northerly airs, barometer 29.67 in., temperature 83°. At 8 p.m. No. 5 Typhoon Signal was showing and by this time all ships alongside had left their berths and moored to buoys or anchored in the harbour to await the Typhoon. Owing to the hostilities in North China there were many extra ships in addition to the normal shipping, so the Typhoon anchorages were literally crowded, leaving barely sufficient room to swing with safety.

During the first watch the barometer fell slowly and the wind gradually freshened with squalls from the N.W. At midnight the reading was 29.49 in., temperature 83°, wind N. by W., force 6. The barometer now commenced to fall rapidly and the squalls became intensified with heavy rain.

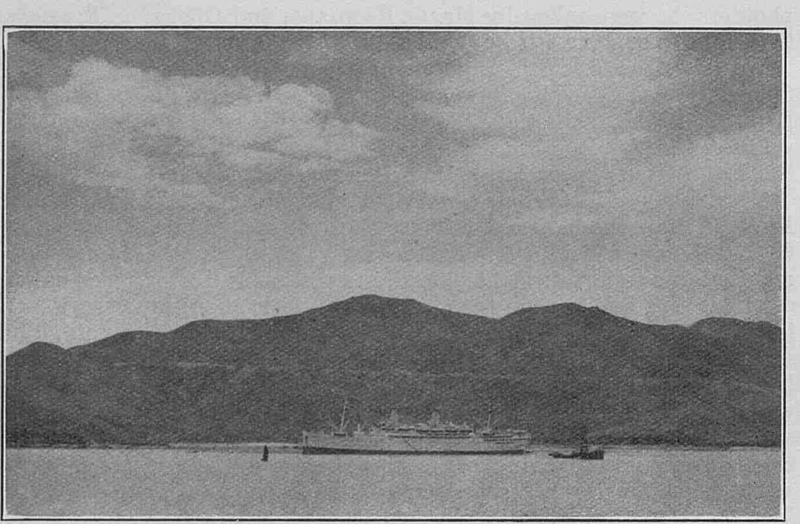
At 3 a.m. the barometer was 28.93 in., temperature 82°, wind N.W.10, with continuous heavy rain. Conditions now seemed to indicate we were lying in the direct path of the storm. Between 3 a.m. and 4 a.m. a slight lull was felt with the wind veering to the N.E., force 6–7. The sky, however remained overcast and the barometer continued to fall.

About 3.45 the barometer reached its lowest reading 28.30 in., temperature 80°. The wind now came away from the east and blew

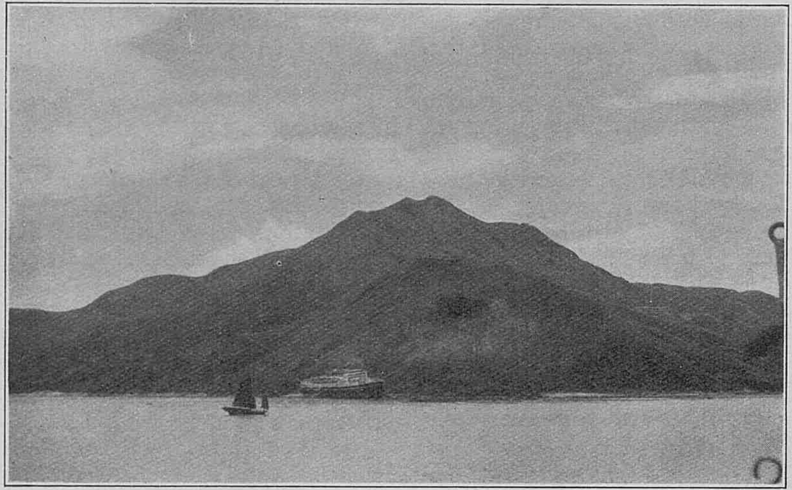




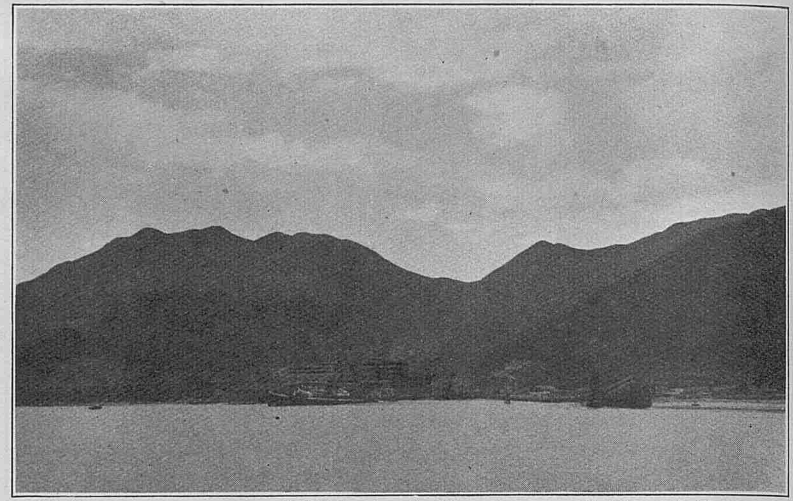
"Talamba" ashore off Lye Mun Point.



" Conte Verde " ashore in Sai Wan Bay.



" Asama Maru " ashore in Sai Wan Bay.



Chinese coaster and " Tymeric " ashore off North Point.

with greater fury accompanied by torrential rain. We logged the wind force 12, and later heard it was registered by an electrical anemometer ashore at 164 m.p.h.

It was later found that the centre of the Typhoon passed between Waglan Lighthouse and the observatory (approximately two miles south of the ship).

During the height of the storm the ship was sheering considerably, and the engines were used to ease the strain on the cables. During the middle watch several vessels were observed to be dragging and passed dangerously near to us on either side.

From now the barometer rose rapidly, the wind veering to the S.E. As the dawn came in the terrible destruction caused to the shipping was apparent all around us, and the wireless messages of ships in distress and requiring assistance were continually coming in. The harbour looked a pitiful sight indeed, and the havoc caused to shipping was probably the worst in the history of the Colony. Over 20 ships were on the casualty list.

By the Grace of Providence the only damage we sustained were two panes of glass broken on the bridge and a funnel stay.

SQUALL.

China Sea.

The following is an extract from the Meteorological Record of S.S. *Tudor Star.* Commr. G. C. H. Noakes, R.N.R., Singapore to Japan. Observer, Mr. F. W. Grist, 2nd Officer.

26th September, 1937, 0740 G.M.T. Heavy Cunb. clouds were noticed to the N.E. and it was soon seen that a squall was approaching with heavy rain. In these clouds three rays of coloured lights, viz. red, green and white, were seen to stretch along the horizon over an arc of about one point of the compass, the dark clouds making them seem very bright. The phenomenon lasted for about 10 minutes then completely disappeared. The breeze freshened from N.N.E. and torrential rain fell until 0810 G.M.T., thence everything was normal again with excellent visibility, calm smooth sea and Cu. cloud 4/10th.

Position of Ship : Latitude 16° 25′ N., Longitude 113° 30′ E.

COMMANDER GORDON STAVELY HORSBURGH, O.B.E., R.D., R.N.R.

By a Brother Officer.

Captain Gordon Stavely Horsburgh, Marine Superintendent of Cunard White Star, Ltd., died at his home in Liverpool on 22nd October, 1937, in his 58th year.

His death, which came suddenly after only a few days' illness, was a sad shock to all members of the staff both ashore and afloat, and indeed to the shipping community in all parts of the kingdom.

A sketch of his career has already appeared in the pages of the Marine Observer, but as an old shipmate of his I would like to place on record an appreciation of him as a man.

A general indication of his character may be gathered from the fact that those members of the staff who came under his control as Marine Superintendent, were wont to say emphatically, " When you take a matter up with Captain Horsburgh you can be sure of getting a fair deal."

He was a shrewd judge of character and could sum up an individual or a situation quicker than most men. His quiet genial manner encouraged men to confide in him, with the sure knowledge that their feelings would be respected. Always ready to do a good turn for a deserving case, he abominated anything in the nature of eye-service or lip-service. He was true to himself and demanded integrity in others.

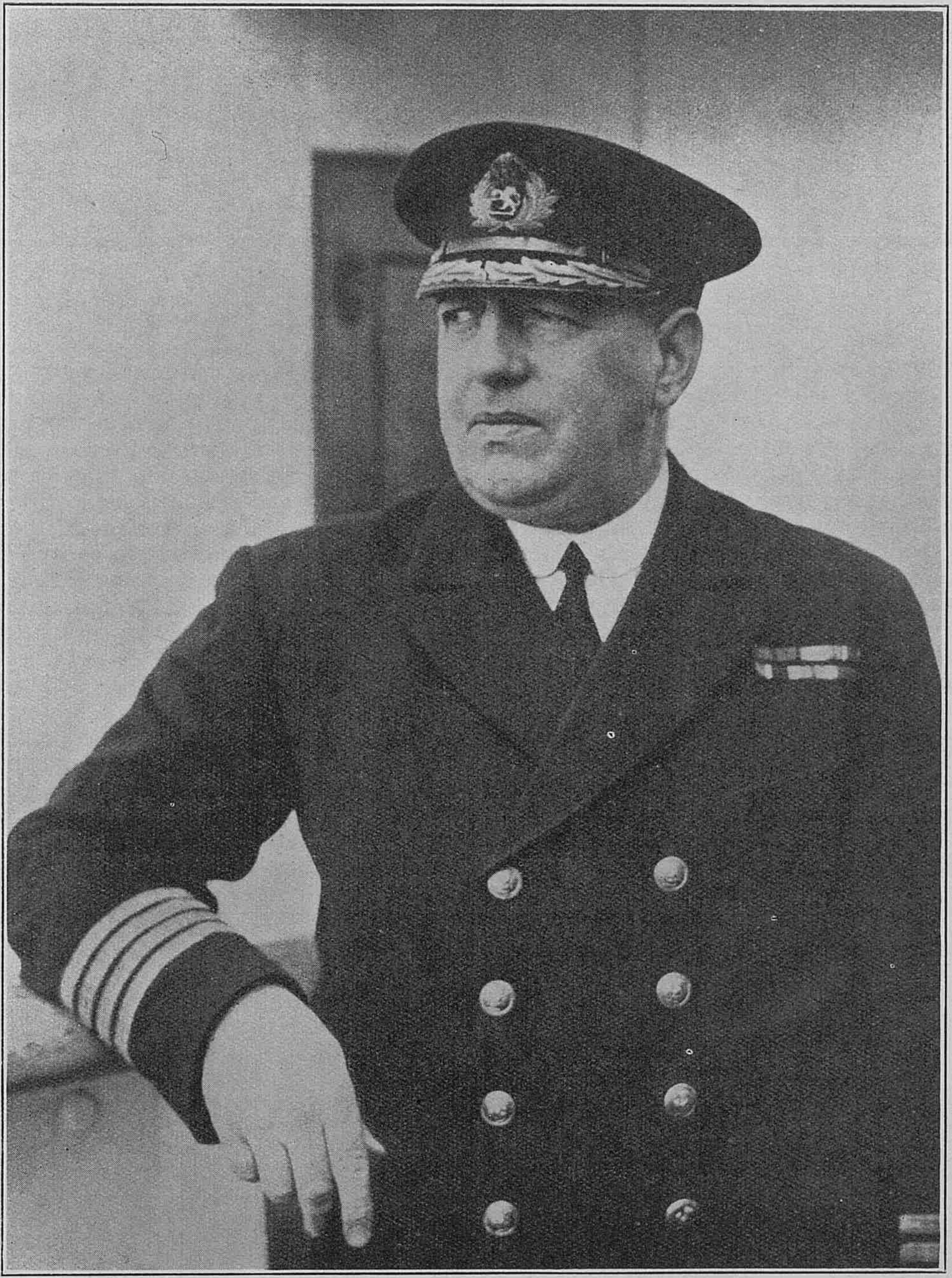
Apart from his undoubted capabilities as a ship-master, and later, in his official capacity on shore, his outstanding qualities were tact, a keen sense of humour and a kindly thoughtfulness for all with whom he came in contact.

As a ship-master he was willing to place implicit trust in all officers who proved themselves worthy of it, and in this way he secured loyal and willing service. He made a point of getting to know his crew and rarely forgot a name or a face. He regarded them as friends. Their troubles were his troubles and no man ever appealed to him in vain for advice or assistance. His various commands were happy ships, entirely free from departmental squabbles. His tact and sense of humour carried him lightly over many difficult stiles and he had the happy knack of quickly sizing things up in their true proportions. Molehills were never mountains to a man of his calibre.

On becoming Marine Superintendent he never lost sight of his experiences afloat and in consequence his dealings with the sea-going staff showed a deep and sympathetic understanding of their lives and conditions of service. By his untimely death, all hands feel that they have lost a valued friend and leader.

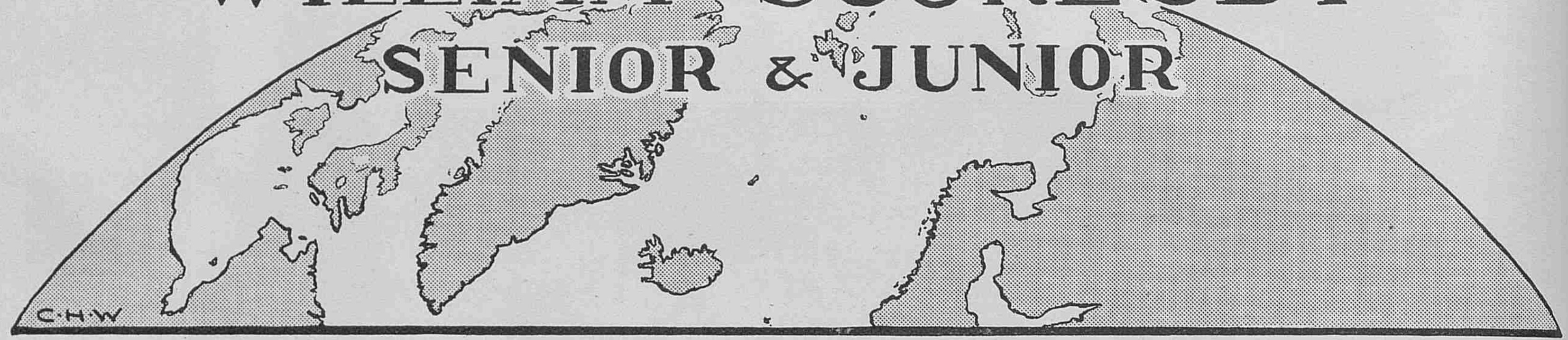
Some conception of the esteem in which Captain Horsburgh was held may be noted from the fact that several hundred notable personalities in the shipping world gathered together at the memorial service held in his honour at Liverpool Cathedral and paid solemn, silent tribute to the passing of a great seaman.

J. G. P. B.



COMMANDER G. S. HORSBURGH, O.B.E., R.D., R.N.R.
The Master of the " Samaria," 1923-25.

THE CAPTAINS WILLIAM SCORESBY SENIOR & JUNIOR



1760-1829 AND 1789-1857.

Prepared by Commander C. H. Williams, R.N.R.

These two whaling captains, father and son, were merchant seamen of outstanding ability. It is fitting that the following short accounts of their lives should appear in this journal, for both of them made many and varied observations of phenomena at sea.

Scoresby the younger, in particular, was of a truly studious nature, and he made careful notes of weather, ice, magnetism, geology, geography and natural history on his whaling voyages. His book "An Account of the Arctic Regions and Northern Whale Fishery," published in 1820 was at once recognized as a standard work on the subject. It helped to call attention to the usefulness of systematic observations of weather at sea, and to the need for the collection of oceanographical and other data for the improvement of navigation.

Both men were first rate seamen and navigators, of exceptional originality of mind and keen perception and application of scientific principles.

When it is remembered that the Scoresbys were engaged in the arduous and dangerous work of Arctic whaling, and that exploration and research were not their business, it is astonishing that they managed to make so many careful observations and surveys.

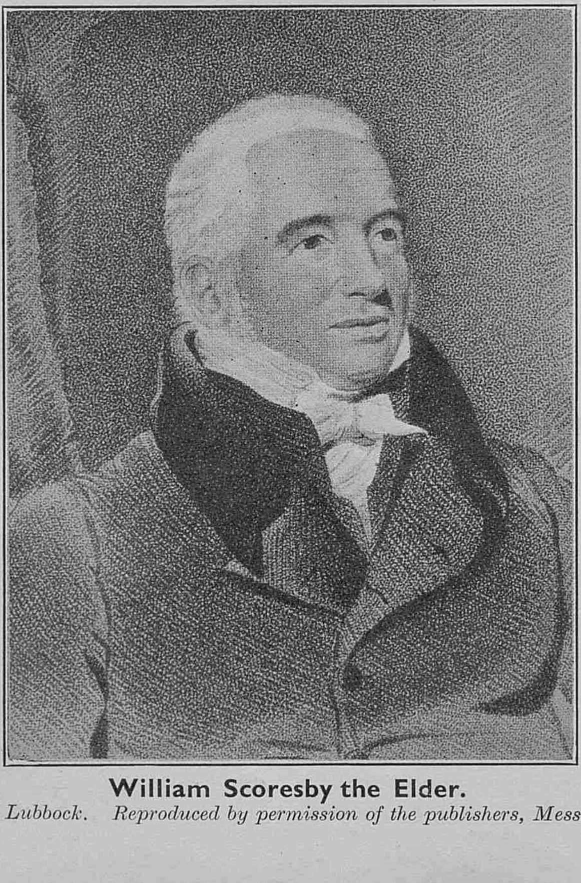
Between them they did a lot to make Arctic navigation more certain. To them we owe our first knowledge of the coast line of East Greenland.

The Northern whaling in their day was probably the hardest service known to seamen. The losses in men and ships were sometimes heavy. The danger of the work and the severity of the climate of the Arctic waters called for seamanship of a very high order, and for the exercise or originality and resourcefulness.

During the seafaring careers of these two men British Northern Whaling had reached great prosperity. English ships had been engaged in the Greenland whaling since about 1613, but with little success in the early days. In 1733 the Government revived the trade by offering a bounty of 20 shillings a ton to shipowners, increased later to 30 shillings and finally in 1749 to £2.

This put whaling on its feet, and the bounty was gradually withdrawn.

When Scoresby the elder first went to the Greenland seas in 1785 there were about 20 whalers sailing annually from the port of Whitby alone. In 1821 52 whale ships from Hull killed 498 whales, which equalled in whalebone and oil about £150,000. By 1865 only two whalers, the *Diana* and the *Aeolus* sailed from Hull, and the great days of the Greenland whaling were over.



William Scoresby the Elder.

Illustration from "Arctic Whalers" by Basil Lubbock. Reproduced by permission of the publishers, Messrs. Brown, Son and Ferguson, Ltd., Glasgow.

William Scoresby the Elder was born on the 3rd May, 1760, on a small estate called Nutholm farmed by his father, in the township of Cropton, about 20 miles southwest of Whitby, Yorkshire.

He started work on his father's farm at the age of nine, and remained at that employment until he was 19, when he decided to go to sea. He was bound apprentice in a ship called *The Jane* of Whitby, and made voyages to the Baltic in her, where he got his first experience of ice.

While still an apprentice he showed a free mind in studying navigation, refusing to accept the arbitrary rules then generally used in working the reckoning, but making his own allowances. His sound judgment in this matter on one occasion was the means of saving the ship from stranding.

In 1781 he joined the *Speedwell* cutter bound for Gibraltar with stores for the relief of the garrison. The *Speedwell* was captured by the Spaniards and the crew made prisoners of war. They were taken into Cadiz and marched inland to a small town called St. Lucar la Major, in Andalucia.

Scoresby and another English sailor escaped, and after experiencing considerable hardship, eventually reached home.

He then remained ashore at his father's farm for two or three years during which period he married. In 1785 he returned to sea as a seaman in the Greenland whaler *Henrietta*, Captain Crispin Bean.

Scoresby was by then about six feet tall and very muscular. His energy and ability raised him on his sixth voyage to the post of second officer, or "specksioneer" (the officer in special charge of the whaling gear and the conduct of the flensing operations. He was also a principal harpooner).

In 1790 Captain Bean retired, and advised the owner to appoint Scoresby to the command. This was done, but rather unwisely the owner retained in the ship the mate and other officers over whose heads Scoresby had been promoted.

The Greenland whaling had a very bad season, and to make matters worse, Scoresby had little help from his disgruntled officers. The *Henrietta* returned to Whitby "clean," having killed no whales at all. Luckily she was not the only "clean" ship, and Scoresby remained in command. He insisted on picking his own officers and crew, and his next voyage to the Greenland whaling was highly successful.

The ship killed 18 whales yielding 112 tons of oil, an almost unprecedented achievement.

From that time onward he was one of the most consistently successful whaling captains of his time. His new methods, boldness in entering the ice, and energy, enabled him to kill two, three, and even four times more whales in a voyage than many of his English and Dutch competitors.

In 1798 he was offered command of the whaler *Dundee* owned by a London firm. She had a most successful season, returning to the Thames with the spoils of no fewer than 36 whales, a "record" catch.

While in this ship he took his son William, then only ten years old, on a voyage to the Greenland seas. It was an unlucky voyage, as the ship was beset in the ice near Spitzbergen for eight weeks and got only three whales. It does not appear, however, that the father regarded his son as a "Jonah" on this account, for they often sailed together later. During this voyage an incident occurred which will serve to show the courage and nerve of the elder Scoresby. The country was at war, and enemy privateers were sometimes met. Scoresby was prepared for this. The *Dundee* was well armed with 12 guns and a crew of between 50 and 60 men. With the idea of bluffing an enemy, he had signed on in his crew a man who could beat a drum, and another man who could use a bo'sun's pipe in the manner of the Royal Navy.

On the passage North an enemy vessel bore down on the *Dundee*. Scoresby continued on his course and the other ship soon came within hail to windward. On his hailing the *Dundee* Scoresby gave the order, the drum beat for action quarters, the bo'sun's pipe sounded, six ports opened and the guns were run out. Without waiting for any other answer the enemy hauled to the wind on the opposite tack and was soon out of sight. Whalers sometimes sailed in company as protection against enemy ships of war and privateers. The Whitby whaling fleet sailed together in 1808 under Scoresby as commodore in the *Resolution*, which ship was well armed and had a letter of marque.

Like most industries that have been in operation for a hundred or more years, the whale fishery in Scoresby's time had developed many rules and customs, and an exact system and routine was observed by the whaleman in flensing a "fish," no matter if it were large or small. Often with a small whale the men were in each others way. It is always difficult to break down an established custom, but Scoresby insisted on an improvement, and he evolved a system of work which enabled the job to be done in much less time. His well thought-out method later became general among the Greenland whalers.

In 1803 Scoresby became master and part owner of the whaler *Resolution* of Whitby, 291 tons burden, young Scoresby, aged 13, being bound apprentice in her.

On her voyage in 1806 the *Resolution* encountered the pack ice in Latitude 76° N. on the west side of Spitzbergen on the 28th April. They forced the ship into the pack as far as Latitude 77° by the 7th May with several other whalers in sight. On the 13th May they were in Latitude 78° 46′ N. In spite of strong "ice blink" to the northward. Scoresby decided to push north. His experienced eye had detected a streak of "water sky" below the "ice blink," close to the horizon. He also noticed a very slight movement of the ice due to a swell. By carefully observing this it became evident that the swell was coming from the northward, indicating open water of some extent. By tremendous exertions the ship was forced through the pack, sometimes by warping, cutting channels with ice saws, towing by boats, "tracking" by men on the ice, and by "sallying" the ship when she was ice bound. (Scoresby is credited with this idea of "sallying," or "overing," as it was sometimes called. It is done by making the ship roll slightly by means of the crew running simultaneously from one side of the ship to the other, and it has often been effective when a ship wedged in the ice had become otherwise utterly immovable.)

The ship reached open water in about Latitude 80° N. Scoresby's extraordinary strength of constitution is shown by the fact that he was on deck or aloft directing practically the whole of this time, five days. This expanse of open water stretched E.N.E. and W.S.W. between the main bodies of ice to the northward and southward which were about from 10 to 20 leagues apart, and extended westward to about Longitude 8° W. Scoresby then sailed eastward along or within sight of the northern pack for about 300 miles.

On 23rd/24th June, at midnight, an altitude of the sun below the Pole, carefully taken with a 15-inch sextant, gave a latitude of 81° 12′ 42″.

He continued until next morning when the latitude estimated from this observation was 81° 30′ N. in Longitude 19° E., within 510 miles of the Pole.

This is probably the highest latitude ever reached under sail only. There was still open water to the N.E. and had exploration been his only object he could have gone further north.

In this ice-surrounded sea they killed 17 whales. On the 29th June she was a full ship, with the produce of 24 whales, some seals, walruses and two bears.

In 1810 Scoresby Senior resigned the command of the *Resolution* in favour of his son, who was just 21 years old, and went into partnership with three others in founding the "Greenock Whale Fishing Company."

He bought the *John*, a Batavia built teak ship of 316 tons burden, and made several successful whaling voyages in her.

He retired from the *John* in 1815, and spent the summer in England, for the first time for over 30 years. The command was given to his son-in-law Thomas Jackson.

After two whaling voyages in a new ship called the *Mars*, he spent another year ashore, during which he bought the *Fame*, a teak built ship of 370 tons, originally brought into England as a prize from the French. Following a suggestion of Wm. Scoresby the younger, through Sir Joseph Banks the President of the Royal Society, the Government had decided to send exploring expeditions to the Arctic. Scoresby had hoped that the Government would use his stout ship *Fame*, with his son in command, but they decided otherwise. The *Fame* was whaling under Scoresby Senior until 1823, when she was destroyed by fire while at the Orkneys. He was then 63, and he decided to retire from the sea.

Scoresby Senior had made 30 whaling voyages from 1791 to 1822. He commanded in turn the ships *Henrietta, Dundee, Resolution, John, Mars* and *Fame*, killing in all 533 whales, an average of 18 a voyage. He was probably the most successful whaling captain of his time, his average cargoes of oil being nearly double that of the average of 22 ships during the period. His son estimated the gross proceeds of the 30 years' adventures at about £200,000, about £90,000 clear profit. This, as there was but one ship and the capital invested not great, probably not more than £9,000, yielded £3,000 a year, 33⅓ per cent. per annum on the capital employed. His remarkable success was no doubt due to his bringing a truly resourceful mind to bear on the problems of the whale fishery and of navigating his ship. He was never hampered, as many of his contemporaries were, by traditions and customs. Most of the whale ships of his time were ill adapted for beating to windward. When without cargo they were generally "flying light." Their sails were cut to bag, and they made poor headway. SCORESBY adopted a totally different system. He ballasted the ship by filling the lower and second tiers of whale oil casks with water, so that the ship was in good trim and drawing as much as when she was a third part loaded. He had the sails cut to set as flat as possible, and, as results showed, he got to windward of his competitors, actually and metaphorically. But the adaptation of the gear was not the only reason for the ship's improved sailing qualities. It was largely the skill and judgment of the man, the exercise of what his son called the "beautiful practical science" of seamanship, for when he left the *Henrietta*, which had for years been the best "on a wind" of the whaling fleet, and went to the *Dundee*, the *Dundee* took the lead, and so with his other ships in turn.

He also made many improvements in the gear of whaling; harpoons, lances, ice gear and the arrangement of the ship's boats. He is credited with having invented the "crow's nest" in about the year 1799. Some improvements in the harbour and town of Whitby were carried out on his suggestion.

In 1829 Captain WILLIAM SCORESBY the Elder died, a renowned seaman and an esteemed man of science. At Whitby there is a pump in Salt Pan Wells erected by WM. SCORESBY in 1819. It bears the inscription, "Draw the water and drink it, but, for Heaven's sake, don't talk."

William Scoresby the Younger, Master Mariner, Author and Parson, was born at Cropton on 5th October, 1789. As mentioned in the foregoing notes on his father, young SCORESBY made a voyage to the Greenland seas when he was only 10 years old. He then returned to school until 1803, when, not yet 14, he was bound apprentice in his father's ship *Resolution*. By 1806 he was Mate of the same ship. He was of a very inquiring and studious turn of mind. At the end of the whaling season, in the autumn that year, he entered Edinburgh University to study chemistry and natural philosophy.

On the whaling voyage of 1807 he surveyed Balsa Sound in the Shetland Isles. That winter he volunteered for service with H.M. Fleet at Copenhagen to help bring home Danish prizes. These prizes were 17 ships of the line, 9 frigates and 25 gunboats. It was one of these gunboats that SCORESBY and a crew of six merchant seamen were to bring to England. He considered the craft unseaworthy for the passage (her draft was only about three feet) and he wrote to Admiral GAMBIER asking to be relieved of the duty. The request was not complied with, but measures were taken to ensure the men's safety. SCORESBY's gunboat was taken in tow by H.M.S. *Alfred*, 74 gun ship, Captain JOHN BLIGH.

Soon after clearing the land the gunboat, being towed at a good speed in a rough sea, was evidently about to founder, and before the second night out she was abandoned, SCORESBY and his crew being taken aboard the *Alfred*. Of 25 of these gunboats, all except three sank.

In his account of this voyage SCORESBY remarks on the orderliness and comfort of the man-o-war, and also notes the very severe discipline.

After this service he returned to whaling in the *Resolution*, and when the season was over, renewed his winter studies at Edinburgh University.

On attaining the age of 21 he was given command of the *Resolution*, and made a successful whaling voyage. That year, 1810, he married a Miss LOCKWOOD, daughter of a shipbroker of Whitby.

As a master he had now more time during his voyages, especially when becalmed, or when beset in the ice, to apply himself to his scientific studies. He conducted many experiments and investigations while at sea, in such subjects as magnetism, refraction, the density of ice, temperatures of sea water at different depths, the formation of waves, and the natural history of the Arctic seas.

He also kept careful records of weather, with remarks on the formation of fog, and on sun haloes, etc. He made many beautiful drawings of the form of snow crystals as seen through a microscope.

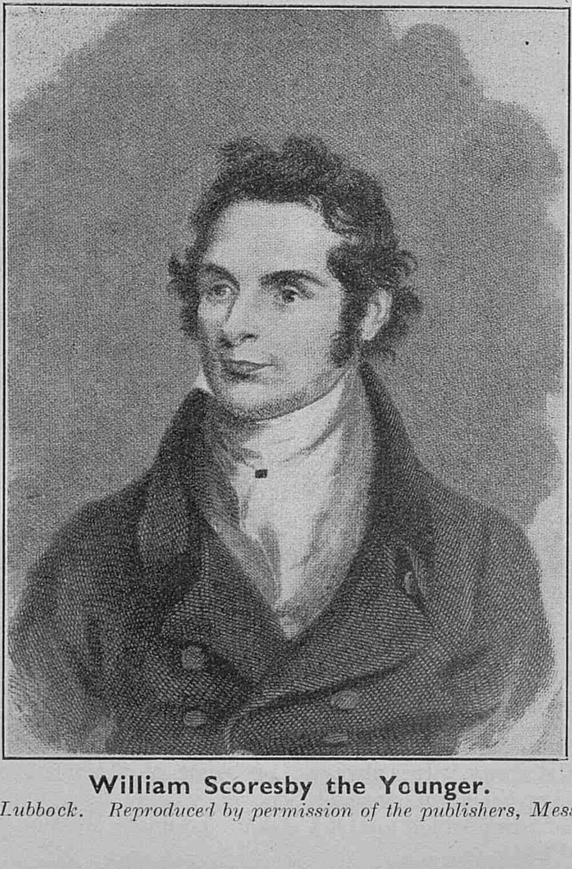
The wind force in his Meteorological Log was noted by 12 descriptions, from Calm (0) to Hurricane (12) and was similar to Admiral Beaufort's scale which had been brought into use in the Royal Navy a few years earlier. His observations of set and drift helped to establish the fact of the South-Westerly set of what we now call the East Greenland Current.

In 1813 he was in command of the whaler *Esk* and he made a very profitable voyage in spite of it being a bad ice year. SCORESBY had for some time been experimenting with apparatus for ascertaining the temperature at various depths, He found the temperature of the Greenland sea at depths down to about 4,500 feet to be warmer than the surface water, in some cases by as much as 8° F.

This was reverse of what was then generally supposed to be the case, and was a remarkable discovery. Modern oceanographical research in the Arctic has confirmed this.

During the winter of 1814 SCORESBY'S name was much to the fore on account of his reading a paper before the Wernerian Society on "A description of the Polar Ice."

The naturalist BARON VON BUCH in a letter to a friend at the time said: "The memoir which I now send you contains a great many facts hitherto very imperfectly known, and makes us acquainted with a part of the globe concerning which we possess very little accurate information. I confess the reading of this memoir interested me extremely. The author, Mr. SCORESBY, is a most excellent observer. He has visited the



William Scoresby the Younger.

Illustration from "Arctic Whalers" by Basil Lubbock. Reproduced by permission of the publishers, Messrs. Brown, Son and Ferguson, Ltd., Glasgow.

Polar Regions fifteen times, and every year has touched 80° of North Latitude. His private papers contain numerous observations on the temperature of the sea, at its surface, and at different depths. He has devoted much time to the determination of the specific gravity of the water of the different tracts of the ocean which he traversed, and has been careful to bring with him bottles of these waters. Mr. SCORESBY is also known as one of the most courageous and skilful of the Captains who frequent the Greenland Seas; he, indeed, is a man worthy to be placed along with a HUDSON, a DAMPIER, and a COOK, and if he should ever be placed at the head of a voyage of discovery, I am persuaded that his name will descend to future ages with those of the most able navigators."

SCORESBY's writings and lectures called attention to the need for systematic observations of weather and other scientific matters over the ocean, and although he confined himself mostly to the Arctic Seas, it is probable that he helped to inspire men like Commander MAURY and Admiral FITZROY in their great work a few years later.

During the whaling voyage of 1816 the *Esk* was nipped in the ice and badly damaged. By great efforts on the part of SCORESBY and his crew aided by the crew of the *John* (Captain JACKSON, SCORESBY's brother-in-law) the ship was prevented from sinking and was brought back safely to Whitby.

In 1817 he pentrated to within sight of the East Coast of Greenland. He landed on Jan Mayen Island and made numerous observations there, and also found open water North of Spitzbergen.

That winter he wrote to SIR JOSEPH BANKS, President of the Royal Society, suggesting that the time had come for this country to again resume Arctic exploration. SIR JOSEPH BANKS and SIR JOHN BARROW put the suggestion to the Admiralty and in consequence two Naval expeditions for discovery were prepared for 1818. Among the officers in these two Naval expeditions were names destined to become famous in Arctic exploration, ROSS, FRANKLIN and PARRY.

SCORESBY believed that a Northwest Passage existed but that bad ice conditions would make it impassable in one season. He also laid it down that small vessels are best for Arctic work. Both these remarks have proved to be correct.

He was also convinced that the discovery of the Northwest Passage and the then undiscovered North Coast of America, should be made by explorers by land rather than attempted by sea. In his day many people believed in the probability of an open ocean round the pole. SCORESBY was certain that the Arctic Basin was perpetually covered with ice, as it is now known to be.

In 1819 SCORESBY was elected a fellow of the Royal Society of Edinburgh. He also read a paper to the Royal Society, London, on the variation of the magnetic needle. That year he moved to Liverpool to superintend the building of the whaler *Baffin*.

This ship was named in honour of " our long neglected navigator " the discoverer of Baffin Bay in 1616. (In 1926 the name of the subjects of these notes was also fittingly honoured in the naming of the Royal Research Ship *William Scoresby*, recently employed in whaling research in the Antarctic). The picture below, of whalers in the ice, shows the type of vessel commanded by the SCORESBYS.

SCORESBY commanded the *Baffin* on her maiden voyage in 1820 and returned with a larger cargo than had ever before been imported from the Greenland seas into Liverpool. His book " History and Description of the Arctic Regions and of the Whale Fishery " was published that year while he was at sea. It was at once recognized as a standard work on the subject and may be considered one of the foundation stones of Arctic science.

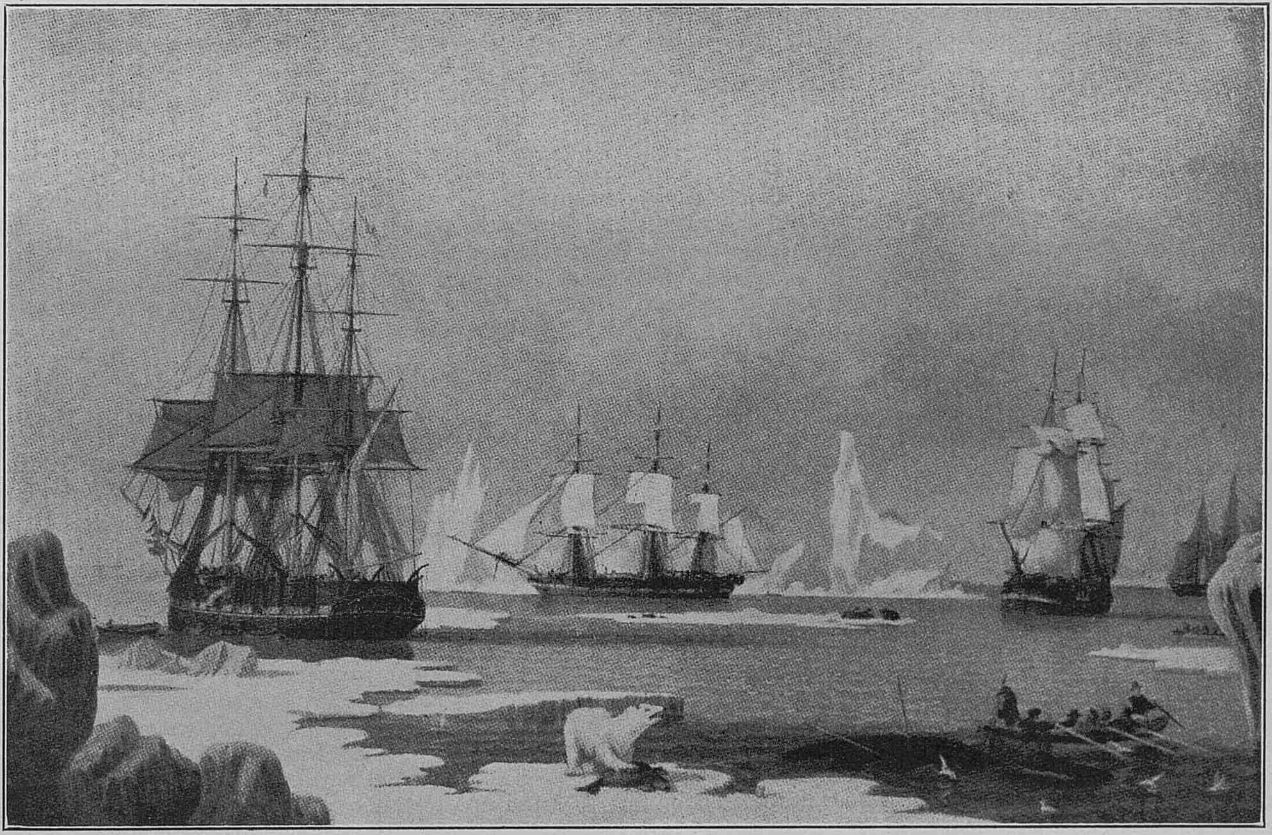
In SCORESBY's day there were few lighthouses on the British coasts, and at about this time he put forward useful remarks and suggestions for their improvement. He also suggested the publication of a Light List. (The first Admiralty Light List was published a few years later in 1832.)

On his whaling voyage in 1821 he was accompanied by Captain MANBY, an Army Officer, who was the inventor of the mortar apparatus for saving life at sea in cases of shipwreck. He made this voyage with SCORESBY to try out a harpoon gun and an explosive harpoon. MANBY considered SCORESBY to be the most remarkable man of his age he had ever met.

The following year SCORESBY in the *Baffin* penetrated the western ice in Latitude 75° and approached the coast of East Greenland in search of whales. The coast from Latitude 70° to 74° had previously been roughly traced by SCORESBY the Elder, and the son determined to carry out a systematic survey, if possible.

At that time the best charts of this coast were *degrees* out in longitude and were almost useless. Except for the small portion of the coast seen by HUDSON in 1607, practically nothing was known of it. SCORESBY sighted the coast about 50 miles away in Latitude 70° 06′ N.

The ice prevented a close approach to it at once, but he surveyed it by careful " fixes " and bearings, and made drawings of its appearance. Observations for longitude by chronometer and by " Lunars " showed the charted coastline to be in error as much as eight to fourteen degrees of longitude.



Whalers in the Arctic.

Illustration from " Arctic Whalers " by Basil Lubbock. Reproduced by permission of the publishers, Messrs. Brown, Son and Ferguson, Ltd., Glasgow.

By boldly forcing his ship through the pack he was able, by the 19th July, to close the land in Latitude 71° 02′ N., and on the 24th he landed on a rocky point in Latitude 70° 03′ N. which he named Cape Lister, after a friend of his. SCORESBY was probably the first European to ever set foot on that coast. (The colony established from Iceland in about the year 1000 had been well to the southward.)

SCORESBY witnessed a remarkable mirage on the day he landed. He sighted a distinct inverted image of a ship in the clear sky, the ship herself being entirely below the horizon. She was so well defined that, with the aid of a telescope, he was able to recognize her as his father's ship, the *Fame*. This proved later to be correct. The distance apart of the ships at the time was 30 miles.

The *Baffin* entered a large inlet in Latitude 70° 24′ 42″ N. and Longitude 22° 10′ W., into which the current set at half a knot. Soundings got no bottom at 220 fathoms. The existence of this inlet was originally discovered by his father, so the son named it Scoresby's Sound. The younger SCORESBY landed at several places and collected geological specimens. Extreme heat was experienced in the valleys. No inhabitants were met with, but traces of their recent existence on the coast were many. He fixed the positions of and named numerous points, islands, inlets and mountains. When the coast was re-surveyed later many of his names were changed, but have since been given the names allotted by SCORESBY, the original explorer.

Unfortunately, whaling was his business, and not geographical research. He had overcome the greatest difficulty, that of approaching the coast, and he was of the opinion that there was nothing to prevent him sailing between the ice and the land even down to Cape Farewell. However, having obtained an excellent cargo, he worked his way through the ice and reached the open sea on the 27th August, 1822. In view of modern methods in the science of Meteorology in which the "polar front" theory plays an important part, it is interesting to note that over a hundred years ago SCORESBY thought that the meeting of warm air, saturated with moisture from the south, with cold air from the north could alone explain the continued heavy rain that he experienced off Greenland in August. Both the *Baffin* (SCORESBY the Younger) and the *Fame* (SCORESBY the Elder) were several times in great danger before getting clear of the pack. The *Baffin* returned to Liverpool. One harpooner had been lost in attacking a whale early in the voyage, and another hand was washed overboard on the homeward passage. On arrival at their home port SCORESBY heard that his wife had died.

The following season, 1823, he once more sailed north in the *Baffin*, and he again landed in East Greenland, where he made some useful experiments with a dipping needle which had been lent to him by the Board of Longitude.

This was his last voyage to the whaling.

For some years he had been considering leaving the sea and becoming a clergyman, and he now decided to do so. He had always had deep religious convictions.

Towards the end of 1823 he went to Queen's College, Cambridge, with the object of studying for a degree in divinity. During the winter he wrote some scientific papers, and also studied Latin and Greek.

In 1824 he visited Paris, and his account of the passage from London to Calais is of interest. He sailed as a passenger in the steam vessel *Earl of Liverpool* from Tower Stairs on 3rd April. In the Thames he saw the discovery ships fitting out for another Arctic voyage. He does not give their names, but no doubt they were the *Hecla* and *Fury*, under Captain PARRY, R.N.

SCORESBY mentions the Seaman's Hospital the *Grampus*, the Marine School, also a floating vessel, and the "princely hospital at Greenwich for worn-out veteran sailors."

On a marsh between Greenwich and Woolwich were three gibbets whereon hung the bodies of several men convicted of piracy.

At meetings of the Institute of France in Paris, SCORESBY met several distinguished members, including Baron HUMBOLDT, Admiral Count ROSILY, M. AMPÈRE, and M. CURIER.

The next year, 1825, he was ordained deacon by the Archbishop of York and appointed to the curacy of Bessingby, near Bridlington Quay, Yorkshire, at a stipend of £40 a year. As a whaling captain he had been making about £800 a year.

In 1827 he accepted the post of chaplain to the Mariners Floating Church at Liverpool (an old ship of war fitted up for the purpose). The following year he married again. In 1829 his father, who had lived at Whitby since his retirement in 1823, died, aged 70.

SCORESBY the younger remained at Liverpool for five years. The work there was to his liking, as his mission was to men he understood, and in his sermons he frequently used familiar nautical illustrations which caught and held the seamen's attention.

During this period the preliminary meeting of the British Association for the Advancement of Science was held in the theatre of the Yorkshire Museum at York on 27th September, 1831.

At the meeting SCORESBY was elected to the sub-committee for the section of Mathematical and Physical Science. From then until the year of his death he attended the meetings regularly, generally contributing a paper.

In 1832 he was appointed to Bedford Chapel in Exeter. Two years later his younger son FREDERICK died, aged 16, and this sad loss was followed by another when his elder boy WILLIAM died in 1837, aged 26.

SCORESBY had received the degree of Bachelor of Divinity in 1834, and in 1839 the degree of Doctor of Divinity. He was then 49 years old and he accepted the vacant office of vicar of Bradford. The hard work in this large parish during years of much industrial unrest, caused a breakdown in his health. He resigned, but was persuaded to have six months' leave instead, and, thinking a voyage would do him good, he sailed from Liverpool in April, 1844, in the Sailing Packet *Patrick Henry*, bound for New York. He returned to England in September and, still being far from well, he resigned the post of vicar of Bradford. Shortly after this he had a severe illness from which he nearly died.

He made a second visit to America in 1847, returning to England in March, 1848, in the Cunard paddle steamer *Hibernia*. During a gale on the homeward passage SCORESBY measured waves, using the method still advocated in the MARINE OBSERVER'S HANDBOOK. He did this from the top of one of the paddle boxes, a very exposed and wet position. In his own description of this operation he humorously remarks that the crew were amused at this eccentric passenger and thought he must be "either an escaped lunatic or a college professor." He found the average wave height on that occasion to be 30 feet, the highest about 43 feet, velocity 32 knots, length 600 feet, crest to crest.

Mrs. SCORESBY had died in Ireland while he was in America. In 1849 he married a third time and settled at Torquay, where he wrote many literary and scientific papers. He also delivered lectures on Magnetical Investigations, Ocean Currents, Deep Sea Soundings, etc.; SCORESBY'S valuable observations of the East Greenland Current are mentioned by Major JAMES RENNELL, F.R.S., in his work, "An Investigation of the Currents of the Atlantic Ocean."

He made important improvements in the compass needle, and in 1854 he read a paper on "Compass Adjustment in Iron Ships" at a meeting of the British Association. The following year, when 65 years old, he made a voyage to Australia as a passenger in the iron screw steamer *Royal Charter*, a vessel of 3,000 tons, of the Liverpool and Australian S.N. Co. His object was to study terrestrial magnetism, a subject in which he had been interested for many years, and on which he had spent several hundred pounds.

Back in England in 1856 he re-visited Whitby, where he lectured on his voyage. He also lectured on the "Arctic Regions" at Edinburgh, but during the winter his strength gave out and he was taken ill with heart trouble. He managed to get back to Torquay, and died there on the 21st March, 1857.

WILLIAM SCORESBY had the rare gift of being able to get on well with all kinds of people. He could be the sailor, the minister, or the man of science as circumstances required. During his life he wrote 27 theological and literary works and over 60 scientific works, including several books.

At Upton Church in Torquay there is a monument on which is engraved :—

In memory of
The Rev. William Scoresby, D.D., F.R.S.,
Member of the Institute of France,
and of various other Scientific Institutions
in Europe and America.
In early life a distinguished Seaman,
renowned for his discoveries in the Arctic Regions.
Afterwards Vicar of Bradford,
and latterly
Honorary Lecturer of this Church.
Pious, Benevolent, devoted to Science,
of surpassing energy.
His friends and admirers,
in grateful recollection of his Public Services,
and as a testimony of their regard for his private worth,
Have erected this Monument.
Born at Cropton, near Whitby, A.D. 1789.
Died at Torquay, March 21st, 1857.

CURRENTS IN THE SOUTH PACIFIC OCEAN, WESTERN AND CENTRAL PORTIONS.

Prepared in the Marine Division by E. W. Barlow, B.Sc.

There are only two well-defined currents in the western and central portions of the South Pacific Ocean, the South Equatorial Current and the East Australian Coast Current.

Seasonal Variations of Current.—The mean set and drift of current for each quarter of the year has been computed for all parts of the South Equatorial Current and of the East Australian Coast Current, also for selected areas in other regions of the ocean. The results are given in TABLE 1, which shows the seasonal variation of the mean sets and drifts.

The grouping of drifts over areas considerably larger than those for which the arrows or frequency roses are shown on the charts also serves another purpose. In regions where there are no well-defined currents, as in the greater part of the South Pacific Ocean, there may nevertheless, be a resultant flow of water, of slight or moderate strength, in a definite direction, which will be shown in the mean set and drift over a relatively large area. This is the case in parts of the South Pacific Ocean, as will be described later. While such a flow may not be of much direct importance to the navigator, it is important in investigating the circulation of an ocean as a whole.

General Current Circulation of the South Pacific Ocean.—The charts of the general flow of current have been completed, and are shown in FIGURES 1 and 2. Observations are not available for the entire ocean. The largest blank area is that to the westward of the Peru Current. In FIGURE 1 no flow is indicated south of Latitude 20° S., between Longitudes 120° W. and 170° W. This is not because there are no observations, but because there is no appreciable mean flow over this region, from November to April. The drifts set about equally in all directions, as will be seen on the charts of roses.

The South Equatorial Current, Longitude 124° W. to 164° E.—The charting of the currents in this year's work does not extend north of the equator, and the remarks which follow refer to the South Equatorial Current south of the equator. The bulk of this current flows south of the equator, but the older charts indicate that its northern boundary lies a little further north. The South Equatorial Current in this part of the ocean has no definite southern limit, but, generally speaking, there is a marked decrease of speed south of Latitude 6° S., so that this latitude has been taken as the southern boundary of the main body of the current. The same boundary was taken for the eastern part of the current, in last year's work.

The South Equatorial Current is strong throughout the year. As shown in lines 1 to 3 of TABLE 1 it is everywhere strongest during February to April, when, between Longitudes 148° W. and 172° W., the mean drift is 23 miles per day. It is everywhere weakest in May to July, with mean drifts of 11 to 12 miles per day. In August to October its strength increases to 14 to 16 miles per day, falling again in November to January to 12 to 13 miles per day. An investigation of the monthly variation of the South Equatorial Current, over its whole extent, and of its strength compared with that of the South Equatorial Currents of other oceans will be given in the article summarising the currents of the South Pacific Ocean, to be published in the October number.

The greatest drift in the South Equatorial Current between Longitudes 124° W. and 164° E., observed during the period 1910–1937, was at the rate of 77 miles per day, 245°, on March 16th, 1933, recorded by Aux. Sch. *John Williams V* in Latitude 2° 11′ S., Longitude 176° 15′ E., south-east of the Gilbert Islands. Seven other drifts equalling or exceeding two knots were observed during the period 1910–1937. The frequency of drifts of less than six miles per day varies, according to season and longitude, from 0 to 25 per cent. In February to April, when the current is strongest, the frequency of these weak drifts nowhere exceeds 11 per cent.

The mean set of the South Equatorial Current is very constant throughout the year and is nearly due west. As shown in lines 1 to 3 of TABLE 1, it varies, in different longitudes and seasons, between 257° and 267°, while for the most part the variation lies only between 262° and 267°. The current is comparatively steady. The drifts set mainly between N.W. and S.S.W. and the proportion of easterly sets is small. In February to April, when the current is strongest, no easterly sets have been observed between Longitudes 136° W. and 160° W. In May to July, when the current is weakest, its northern limit is Latitude 2° S., between Longitudes 140° W. and 156° W. Between the equator and Latitude 2° S., south-easterly or southerly sets are experienced.

The South Equatorial Current, Longitude 140° E. to 164° E.—There are much fewer observations for this part of the current, the mean sets and drifts of which are given in line 4 of TABLE 1. So far as observations are available, it does not flow south of Latitude 2° S. during the greater part of the year. The mean drift of 29 miles per day, in November to January, is greater than that of any other part of the South Equatorial Current, but is based on only 24 observations. On the other hand, the mean drift of 3 miles per day in August to October, based on 10 observations, is much weaker than that of any other part of the current.

Currents in the South Pacific Ocean.
Summer—November to April.

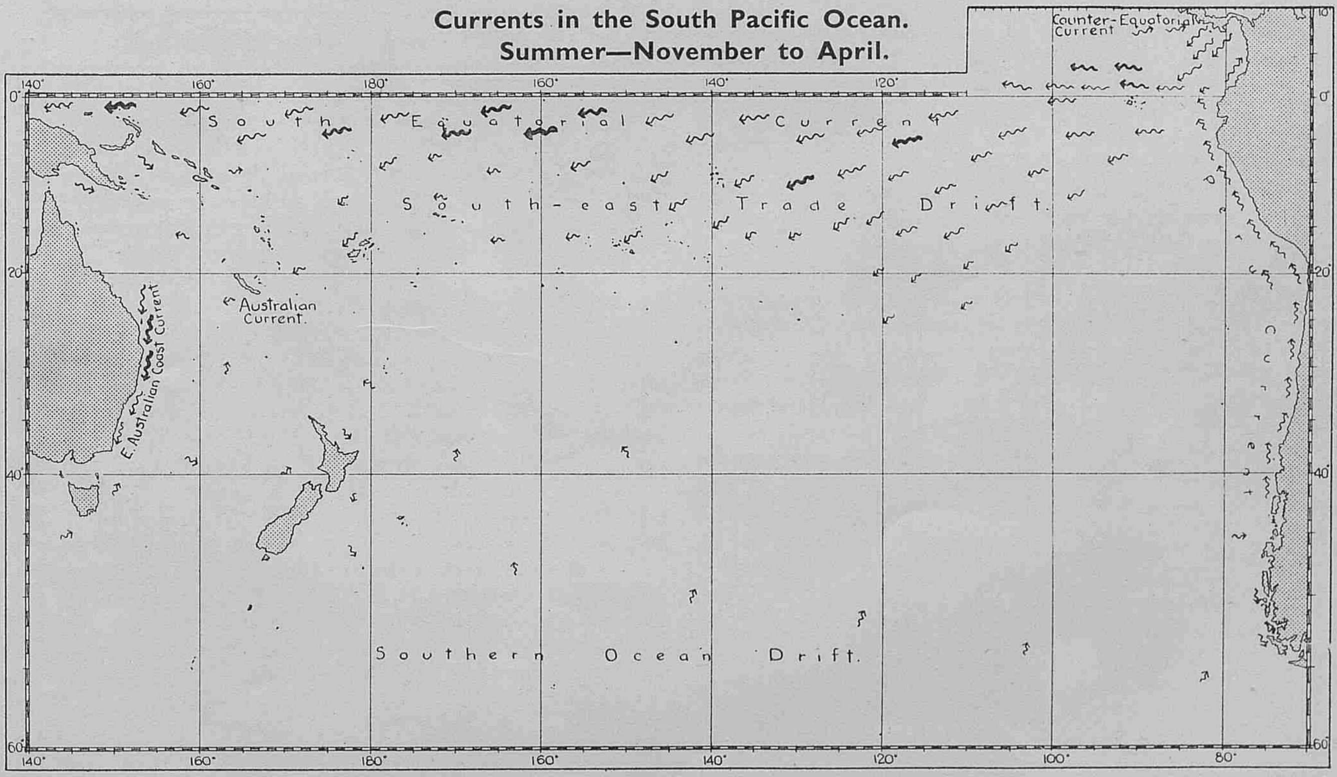


Figure 1.

The mean set is nearly due W. from November to April, but is little north of west during the rest of the year, being W.N.W. in August to October. No other part of the South Equatorial Current has a mean set north of west. It is probable that the current, near New Guinea, is deflected to the north-west, the bulk of it flowing north of the equator.

The greatest drift in this part of the South Equatorial Current, observed during the period 1910–1937, was 67 miles per day, 268°, recorded on May 11th, 1931, by S.S. *Nellore* in Latitude 0° 17′ S., Longitude 144° 25′ E. Two other drifts exceeding 2 knots were observed during the period.

The East Australian Coast Current.—This current is well-defined throughout the year. So far as information is available it originates as a southerly current east of Swain Reefs, in Latitude 20° S. or 22° S., according to season. It approaches the Queensland coast near Great Sandy Island and thence flows down the coasts of Queensland and New South Wales to the neighbourhood of Cape Howe.

The East Australian Coast Current from Latitudes 24° S. to 34° S. (Great Sandy Island to Sydney), is strongest in February to April and weakest in May to July. In February to April the mean drift between Latitudes 24° S. and 32° S. is nowhere less than 21 miles per day and between Latitudes 28° S. and 30° S., south of Brisbane, is 32 miles per day. The part of the current south of Brisbane remains the strongest throughout the year.

The seasonal variations of the East Australian Coast Current, from Swain Reefs to Cape Howe, are shown in lines 14 to 17 of Table 1. The region of Latitude 34° S. to 38° S. (line 17) is taken from the work on the southern part of the ocean, published in 1936.

For the region north of Great Sandy Island (line 14) the mean drift is shown to be strongest, 13 miles per day, in May to July, when the main current is weakest, but as observations are few this must only be accepted as a probability, not as a fact. Another point where caution is needed is the great drop in strength shown in the months of May to October in the current between Latitudes 30° S. and 34° S. (line 16). This weakness of the current may be partly due to the fact that the mean positions of the observations of current off Sydney in these two quarters, as shown by the positions of the arrows on the charts, are further from the shore, due to observation on easterly or westerly courses, than during the rest of the year and therefore outside the main body of the current.

The mean set and drift of the East Australian Coast Current, south of Great Sandy Island, has been computed for each month and the results are given in Table 2, the three sections being the same as those given in lines 15 to 17 of Table 1. There are distinct variations of set, which is usually to the west of south, but is occasionally considerably to the east of south. The number of observations is small in some months but the main features of the current in the three sections agree very well. In Latitude 26° S. to 30° S. the strength of the current increases steadily from 10 miles per day in November to a maximum of 33 miles per day in February, thence decreasing steadily to May and dropping suddenly to only 1 mile per day in June, after which the strength increases. From Latitude 30° S. to 34° S. the strength of the current also drops to 1 mile per day in June, the greatest strengths being 18 miles per day in December and 17 miles per day in February. South of Latitude 34° S., where the current is weaker generally, it reaches its greatest strength in February, 12 miles per day, and is weakest in May, 1½ miles per day. Thus the East Australian Coast Current, south of Great Sandy Island, is everywhere weakest in winter and strongest in summer or early autumn.

The frequency roses for the East Australian Coast Current show that there is in all seasons a number of drifts setting in easterly, westerly and northerly directions, so that this current is not so steady as the South Equatorial Current. The weakening of the current in winter might be due to an actual weakening of the southerly drifts, or to an increase in the strength or frequency of northerly sets, or to both causes. During the period 1910–1937, between Latitudes 26° S. and 38° S., 211 sets with a southerly component and 41 sets with a northerly component were observed in February to April, when the southerly current is strongest. In May to July, when the current is weakest, there were 81 sets with a southerly component and 53 with a northerly component. The ratio of northerly to southerly sets is thus much higher in winter. In Figure 3 the mean monthly strengths of the southerly and northerly components of drift are given. This figure conclusively shows that the cause of the seasonal weakening of the East Australian Coast Current is twofold, a decrease in the southerly flow and an increase in the northerly flow. Thus in the month of June, in Latitude 26° S. to 30° S., where the mean drift given in Table 2 is only 1 mile per day, the navigator will not generally expect to meet drifts of this strength. He will experience in about equal numbers, southerly drifts averaging 9 miles a day and northerly drifts averaging 8 miles a day.

The greatest southerly drifts experienced in the East Australian Coast Current exceed those of the South Equatorial Current. On 12th April, 1933, a drift at the rate of 96 miles per day, 180°, was recorded by S.S. *Strathaird* in Latitude 28° 29′ S., Longitude 153° 53′ E. On 22nd December, 1932, a drift at the rate of 95 miles per day, 199°, was observed by the same ship in Latitude 28° 25′ S., Longitude 153° 41′ E. On 14th February, 1934, a drift at the rate of 93 miles per day, 182°, was recorded by S.S. *Moldavia*, in Latitude 29° 07′ S., Longitude 153° 47′ E. Three other southerly drifts exceeding 3 knots were observed during the period 1910–1937.

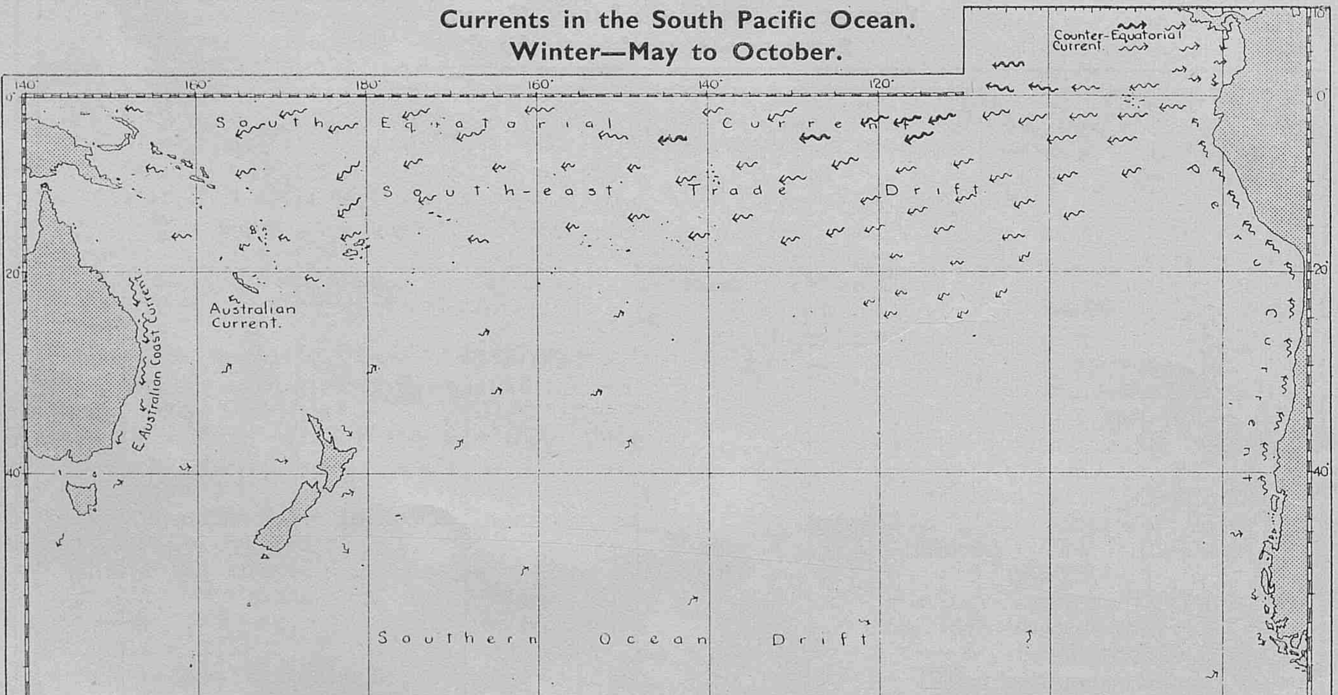

Currents in the South Pacific Ocean.
Winter—May to October.

Figure 2.

Annual Variation in Velocity of the North and South Components of the East Australian Coast Current.

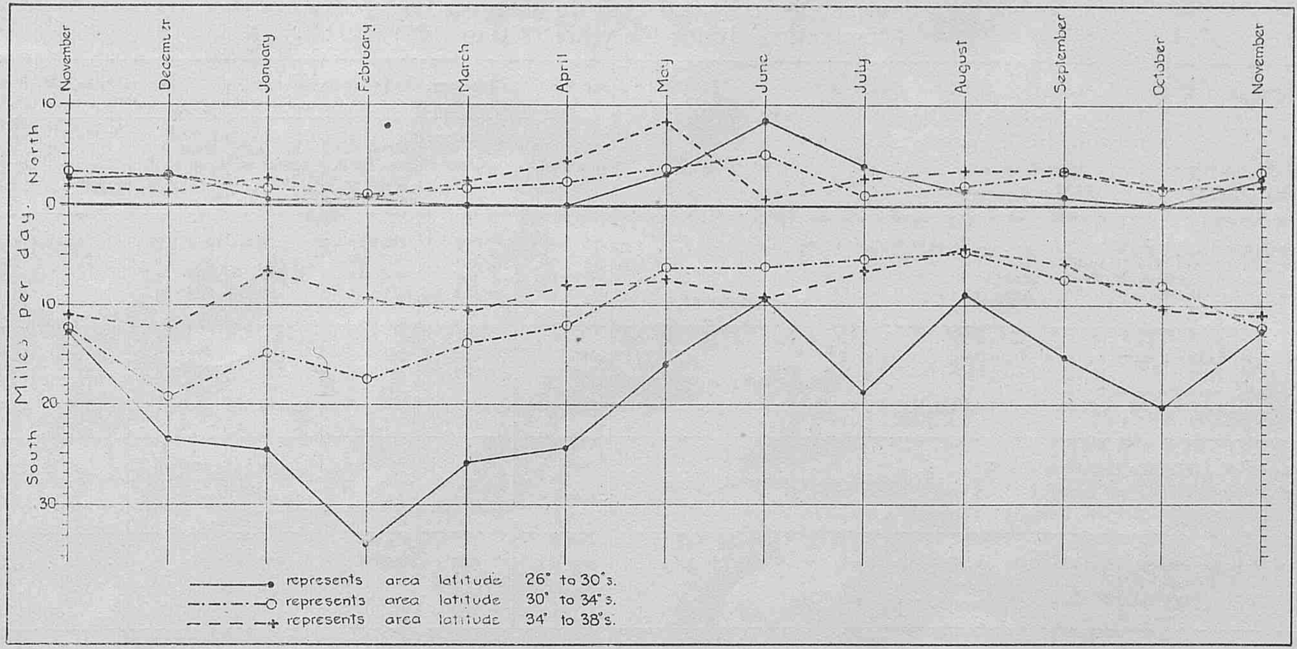


Figure 3.

The majority of the northerly drifts in the region of the East Australian Coast Current do not reach 1 knot, but 10 drifts exceeding 1 knot, between Latitudes 30° S. and 34° S., and one between Latitudes 26° S. and 30° S., setting between 315° and 45°, were observed during the period 1910–1937. Of these the greatest was at the rate of 60 miles per day, 11°, recorded by S.S. *Benalder* on 8th December, 1924, in Latitude 28° 13′ S., Longitude 154° 02′ E.

The positions of the sets and drifts observed between Latitudes 26° S. and 34° S., in the East Australian Coast Current, have been examined and it is found that the southerly and the northerly sets are met with both inside and outside the 100-fathom line. The strongest southerly drifts usually occur on or near the 100-fathom line, while the strongest northerly drifts are usually inside this line. The northerly sets are therefore true reverse sets, occurring within the region of the southerly current. The observations do not give any information about the northerly counter-current, which, according to the Sailing Directions, flows in-shore of the southerly current, within about two miles of the land, especially in the bights. The observations also give no information about the exact width of the current, beyond the fact that between Brisbane and Sydney, southerly currents are observed over a region at least 100 miles wide.

Sets towards or away from the land are not infrequent at all times. Fifteen drifts, setting between 240° and 300°, equalling or exceeding 1 knot, were observed during the period 1910–1937. Of these sets towards the land, six were recorded in May to July, when easterly gales are most violent, the remaining nine being equally spread over the rest of the year. Three of the drifts equalled or exceeded the rate of 2 knots.

South-East Trade Drift.—South of the main body of the South Equatorial Current the water flows westward, though with considerably less speed, to about Latitude 20° S. This was also found to be the case, in last year's work, in the eastern part of the ocean. The mean sets and drifts for selected areas are given in lines 5 to 8, Table 1. The mean sets are mainly W. or W.S.W. and the mean drifts, east of Longitude 152° W., vary from 5 to 8 miles per day. Further west they are weaker. In the region of Fiji (line 8) the mean sets vary between W.N.W. and W.S.W. This current may be called the South-East Trade Drift, since the South-East Trade blows over the whole of this area, though it is not so constant as in other oceans.

The Region of Latitude 12° S. to 20° S., Longitude 152° E. to 164° E. In this area, which lies between New Caledonia and New Guinea, the mean set is westerly throughout the year, mainly a little north of west, so that the water is flowing towards the Torres Strait. As shown in line 9 of Table 1, the mean drift reaches 10 miles per day in May to July. There are, unfortunately, no observations in the Coral Sea except for a few near the south-east coast of Papua. Sets to W.N.W. are, however, shown just east of Cape York on the charts of arrows for May to July and August to October. Off the south-east coast of Papua the few observations available indicate easterly and south-easterly sets in November to April.

South-west of the Solomon Islands and between these and New Ireland, the mean set appears to be reversed in the course of the year, but the observations are few. The chart of arrows for February to April shows a south-easterly flow through this region.

The Australian or New Holland Current.—The older descriptions of current state that a westerly current, so named, flows south of New Caledonia, some of the water from which passes into the East Australian Coast Current. The mean sets and drifts for this region are given in line 11 of Table 1. There is a definite westerly current here but it is very weak, the mean drift being only 2 or 3 miles per day throughout the year.

The Region North of New Zealand.—The mean sets and drifts for Latitudes 26° S. to 34° S., Longitudes 156° E. to 172° W., are given in lines 12 and 13 of Table 1. The mean drifts are weak throughout the year, but a definite seasonal variation is indicated. The mean sets are between N. and E. during May to October and mainly between N. and W. during November to April. During November to April the water thus flows towards and into the Australian or New Holland Current and thence to the East Australian Coast Current. During May to October it sets north-eastward towards the central region of the ocean. As indicated in Figure 2 this weak north-easterly set continues to about Longitude 140° W. During November to April the charts of roses show that there is no appreciable predominance of set in the central part of the ocean, which is therefore left blank in Figure 1.

Strength of Currents in the Central Part of the South Pacific Ocean.—It must always be remembered that weak or negligible mean drifts in any region do not usually imply that the navigator will experience weak drifts in that region. Weak mean drifts usually result from moderate drifts with much variability of set. Inspection of the roses will show that the drifts of the South Pacific Ocean, in regions outside of those of strong current, are by no means negligible and in many parts in all latitudes may occasionally reach or exceed 1 knot. There is not a single rose which does not indicate a proportion of currents exceeding half a knot.

In the South-East Trade Drift five currents of 44 miles per day or more were recorded during the period 1910–1937. The strongest was 49 miles per day, 270°, observed by S.S. *Port Darwin* on 14th October, 1932, in Latitude 11° 20′ S., Longitude 142° 03′ W.

In the Torres Strait a drift of 50 miles per day, 270°, was recorded by H.M.S. *Fantome* on 19th June, 1921, in Latitude 10° 55′ S., Longitude 142° 12′ E.

In the ocean, south of Latitude 20° S., eight drifts of 40 miles per day or more were observed during the period 1910–1937.

Table 1.—South Pacific Ocean, Western and Central Portions.

Seasonal Mean Set and Drift (in Miles per Day)
(Observations during the years 1910 to 1937)

Region.	November to January.		February to April.		May to July.		August to October.	
	Mean Set and Drift.	No. of observations.	Mean Set and Drift.	No. of observations.	Mean Set and Drift.	No. of observations.	Mean Set and Drift.	No. of observations.
1. South Equatorial Current, Latitude 0° to 6° S., Longitude 124° W. to 148° W.	257° 13	86	264° 18	83	257° 12	50	267° 14	85
2. South Equatorial Current, Latitude 0° to 6° S., Longitude 148° W. to 172° W.	263° 12	107	267° 23	103	265° 11	113	262° 14	128
3. South Equatorial Current, Latitude 0° to 6° S., Longitude 172° W. to 164° E.	259° 13	103	264° 18	139	263° 11.5	78	263° 16	119
4. South Equatorial Current, Latitude 0° to 2° S., Longitude 140° E. to 164° E.	265° 29	24	269° 12	17	284° 20	8	293° 3	10
5. South-east Trade Drift, Latitude 6° S. to 18° S., Longitude 124° W. to 132° W.	246° 6	94	270° 8	102	270° 7	96	273° 8	126
6. South-east Trade Drift, Latitude 6° S. to 18° S., Longitude 132° W. to 152° W.	240° 5	221	262° 6	288	277° 6	217	270° 6.5	291
7. South-east Trade Drift, Latitude 6° S. to 14° S., Longitude 168° W. to 176° E.	266° 3	156	204° 2	168	255° 6	186	255° 6.5	217
8. South-east Trade Drift, Latitude 14° S. to 22° S., Longitude 176° W. to 172° E.	296° 3	109	222° 2	145	268° 3	144	282° 4	161
9. Latitude 12° S. to 20° S., Longitude 152° E. to 164° E.	283° 4.5	33	290° 4	62	276° 10	58	264° 6	52
10. Latitude 2° S. to 12° S., Longitude 152° E. to 156° E. and Latitude 8° S. to 12° S., Longitude 156° E. to 160° E.	219° 2	11	123° 5	20	290° 8	14	233° 11	10
11. Australian or New Holland Current, Latitude 20° S. to 26° S., Longitude 156° E. to 172° E. ...	270° 3	122	252° 3	151	296° 3	136	284° 2	178
12. Latitude 26° S. to 34° S., Longitude 172° W. to 172° E....	270° 0*	235	320° 1	224	12° 3	224	51° 2.5	194
13. Latitude 26° S. to 34° S., Longitude 156° E. to 172° E.	314° 1	288	16° 4	277	27° 3	235	46° 1	248
14. East Australian Coast Current, Latitude 20° S. to 26° S., Longitude 152° E. to 156° E.	180° 7	13	188° 12	24	204° 13	13	148° 9	23
15. East Australian Coast Current, Latitude 26° S. to 30° S., coast to Longitude 156° E.	183° 19	77	190° 28	80	181° 10	31	177° 15	30
16. East Australian Coast Current, Latitude 30° S. to 34° S., coast to Longitude 156° E.	191° 13	125	193° 13	148	162° 2.5	88	180° 5	83
17. East Australian Coast Current, Latitude 34° S. to 38° S., coast to Longitude 152° E.	206° 8.5	37	194° 6	77	190° 4	30	207° 4	25

* = Less than 0.5 mile per day.

Table 2.—Annual Variation of the East Australian Coast Current. Monthly Mean Set and Drift (in miles per day).

(Observations during the years 1910 to 1937).

Month.	Latitude 26° S to 30° S.		Latitude 30° S. to 34° S.		Latitude 34° S. to 38° S.	
	Mean Set & Drift.	No. of observations.	Mean Set & Drift.	No. of observations.	Mean Set & Drift.	No. of observations.
November ...	168° 10	23	180° 9	39	196° 9	7
December ...	184° 21	33	203° 18	48	208° 12	13
January ...	189° 26	21	189° 13	39	212° 5	16
February ...	184° 33	21	193° 17	45	203° 9	11
March ...	195° 27	30	186° 12	55	185° 8	23
April ...	190° 25	29	200° 10	48	187° 2	16
May	199° 13.5	6	138° 4	28	127° 1.5	11
June	211° 1	11	210° 1	38	200° 9	5
July	173° 15	14	173° 4.5	22	200° 4	13
August ...	183° 8	8	211° 3	24	255° 3	8
September ...	191° 14.5	11	139° 5.5	31	189° 3	8
October ...	165° 21	11	203° 7	28	176° 9	6

SOUTHERN ICE REPORTS.

During the year 1937.

July.

Year.	Day.	Position of Ice.		Description.	Remarks.	Name of Ship reporting.
		Latitude.	Longitude.			
1937	16	55° 13′S.	72° 56′ W.	Berg	—	S.S. *Pakeha*

August.

No reports.

September.

No reports.

Reports of Ice previous to July, August and September, 1937, will be found in the " Marine Observer," Volume XIV, No. 127, p. 109.

WIRELESS WEATHER SIGNALS.

1.—SHIPS' WIRELESS WEATHER SIGNALS.

A full description of the world-wide system of voluntary "Selected Ships" routine weather reports with instructions was given on pp. 27-40 of the January number of this volume of THE MARINE OBSERVER.

The list which follows contains the latest information of stations to which "A Selected Ships" should report in accordance with those instructions, and stations detailed to receive reports from "B Selected Ships" also in accordance with those instructions.

To decode these reports, and for information of the system of communication of "Selected Ships," all concerned are referred to the PAMPHLET, M.O. 329, concerning which special notice to the masters of British ships will be found on pp. 30 and 31, paragraphs (27) and (34) of the January 1938 number of THE MARINE OBSERVER.

WIRELESS STATIONS DETAILED TO RECEIVE ROUTINE CODED WEATHER REPORTS FROM "A SELECTED SHIPS."

Request for Information.

THE ATTENTION OF METEOROLOGICAL SERVICES IS DIRECTED TO THE INVITATION GIVEN ON PAGE 27 OF VOL. XV, NO. 129, JANUARY, 1938.

Ocean.	Station.	Position.	Call Sign.	Frequency and Wave Length.		Area and limits covered by Station.	Telegraphic address of Meteorological Centre.	Information required—Limit of Groups.	Notes.
				For Station to call up "Selected Ships."	For "Selected Ships" to report to Station.				
Column No. 1.	*No. 2.*	*No. 3.*	*No. 4.*	*No. 5.*	*No. 6.*	*No. 7.*	*No. 8.*	*No. 9.*	*No. 10.*
North Atlantic and North Sea.	Portishead.	Lat. 51° 28′ 41″ N. Long. 2° 47′ 30″ W.	**GKU**	149 kc/s. (2013 metres) and 121 kc/s. (2479 metres) simultaneously	143 kc/s. (2100 metres).	North Sea and Eastern North Atlantic East of Longitude 40° W. but not within 300 miles of station. (*see* Chart of the World.)	Weather London.	Weather only, up to seven groups, preferably No. 3 Supplementary Groups.	"Selected Ships" chosen to report in given order notified by station daily at 2300, 0330, and 1030 G.M.T. Roll call thus—Weather London—call sign of chosen "Selected Ships" to report through GKU at schedule times on 2100 m. and observations for 0000 and 1800 G.M.T. as convenient.
North Atlantic and Mediterranean.	Gibraltar.	Lat. 36° 08′ 32″ N. Long. 5° 20′ 29″ W.	**GYW**	125 kc/s. (2400 metres).	143 kc/s. (2100 metres).	Eastern North Atlantic, South of Lat. 37° N. and Mediterranean Sea.	Meteor Gibraltar.	Weather only. No. 3 Supplementary Groups.	All British "A Selected Ships" within area should report in accordance with Schedule.
North Atlantic.	Horta, Azores.	Lat. 38° 32′ N. Long. 28° 38′ W.	**CTG**	125 kc/s. (2400 metres).	125 kc/s (2400 metres).	Those "A Selected Ships" not in the Roll Call for reporting to Weather London through Portishead, in the Eastern North Atlantic, east of Long. 40° W should report to this station.	Radio Horta.	Weather only, up to seven groups, preferably No. 3 Supplementary Groups.	"A Selected Ships" in the Eastern North Atlantic not on the roll call made through Portishead (described in these notes for Portishead) should report to Horta in accordance with schedule given in the instructions for British "A Selected Ships."
	Louisburg.	Lat. 46° 09′ 16″ N. Long. 59° 56′ 48″ W.	**VAS**	143 kc/s. (2100 metres).	143 kc/s. (2100 metres).	North Atlantic West of Longitude. 40° W.	Weather Toronto.	Weather only, preferably No. 3 Supplementary Groups.	All British "A Selected Ships" within area when bound to or from Newfoundland and Canadian ports or ports to the northward to report through VAS at schedule times and observations for 0000 and 0600 G.M.T. as convenient
	Chatham Mass.	Lat. 41° 43′ N. Long. 70° 47′ W.	**WCC**		142·9 kc/s. (2098 metres).	North Atlantic West of Longitude 40° W.	Observer Washington	Weather only. First four groups of observations taken at 0000 and 1200 G.M.T. only required.	All British "A Selected Ships" within area when bound to or from United States ports or ports to the southward to address their 0000 and 1200 G.M.T. observations to Observer Washington and their 1800 G.M.T. observations to CQ in accordance with schedule.
	Amagansett (Montauk).	Lat. 41° 00′ N. Long. 72° 03′ W.	**WSL**						
	Thomaston.	Lat. 44° 01′ N. Long. 69° 13′ W.	**WAG**						
	Jupiter.	Lat. 26° 56′ N. Long. 80° 06′ W.	**WMR**						
	Lake Worth.	Lat. 26° 38′ N. Long. 80° 03′ W.	**WOE**						

WIRELESS STATIONS DETAILED TO RECEIVE ROUTINE CODED WEATHER REPORTS FROM "A SELECTED SHIPS."

(Continued.)

Ocean.	Station.	Position.	Call Sign.	Frequency and Wavelength.		Area and limits covered by Station.	Telegraphic address of Meteorological Centre.	Information required—Limit of Groups.	Notes.
				For Station to call up "Selected Ships."	For "Selected Ships" to report to Station.				
Column No. 1.	*No. 2.*	*No. 3.*	*No. 4.*	*No. 5.*	*No. 6.*	*No. 7.*	*No. 8.*	*No. 9.*	*No. 10.*
South Atlantic.	Slangkop (Cape Town)	Lat. 34° 08′ 46″ S. Long. 18° 19′ 18″E.	**ZSC**	—	143 kc/s. (2100 metres).	South Atlantic Westward of 25° E. and within a range of about 2,000 miles of station.	Met.	Weather only. Four universal groups and first group of No. 6 Supplementary groups.	Only 0600 G.M.T. observation required. All British "A Selected Ships" within area should report, commencing at 0618 G.M.T.
Red Sea and Indian Ocean.	Port Sudan.	Lat. 19° 36′ 35″ N. Long.37°13′28″E.	**STP**	—	143 kc/s.† (2100 metres).	From Suez to Ras Fartak, Ras Hafun, and western limit of Colombo area.	Weather Khartoum.	Weather only. Four universal groups.	All British "A Selected Ships" within area should report in accordance with Schedule. † Alternatively see particulars on p. 112 and use wavelength and times for "B Selected Ships."
Indian Ocean.	Jacobs (Durban).	Lat. 29° 55′ 40″ S. Long. 30° 58′ 50″E.	**ZSD**	—	143 kc/s. (2100 metres).	Indian Ocean S. of 20° S. and Eastward of 25° E. and within a range of about 2,000 miles of station.	Met.	Weather only. Four universal groups and first group of No. 6 Supplementary Groups.	Only 0600 G.M.T. observations required. All British "A Selected Ships" within area should report, commencing at 0618 G.M.T.
	Bombay.	Lat. 19° 04′ 55″ N. Long. 72° 49′ 54″E.	**VWB**	—	143 kc/s. (2100 metres).	Arabian Sea N. of line C. Comorin to Ras Fartak.	Weather.	Weather only. No. 9 Supplementary Groups.	See Section (35), p. 31 of the January 1938 number.
	Madras.	Lat. 12° 59′ 17″ N. Long. 80° 10′ 56″E.	**VWM**	—	143 kc/s. (2100 metres).	Bay of Bengal N. of line C. Comorin to Achin Head.	Weather.	Weather only. No. 9 Supplementary Groups.	
	Colombo.	Lat. 6° 55′ 14″ N. Long. 79° 52′ 46″E.	**VPB**	143 kc/s. (2100 metres).	143 kc/s. (2100 metres).	Indian Ocean South of a line Ras Fartak, C. Comorin and Achin Head, and within a range of about 1500 miles.	Weather.	Weather only. No. 6 Supplementary Groups preferred.	All British "A Selected Ships" within area should report in accordance with Schedule.
	Mombasa.	Lat. 4° 03′ 11″ S. Long. 39° 39′ 49″E.	**VPQ**	—	125 kc/s. (2400 metres).	From Ras Hafun to Lat. 20° S. when westward of the Colombo area.	Weather Nairobi.	Weather only. No. 6 Supplementary Groups.	All British "A Selected Ships" within area should report 0600 G.M.T. observations.
	Perth.	Lat. 32° 01′ 51″ S. Long.115° 49′31″E.	**VIP**	125 kc/s. (2400 metres).	143 kc/s. (2100 metres).	Indian Ocean and Southern Ocean between Long. 90° and 135° E.; but not within 100 miles of the coast.	Weather Melbourne and Weather Perth.	Weather only. No. 9 Supplementary Groups.	All British "A Selected Ships" within area should report in accordance with Schedule. Reports not required for observation times not starred on Chart, p. 29, of the January 1938 number.
North Pacific and China Sea.	Cape d'Aguilar, Hong Kong.	Lat. 22° 12′ 39″ N. Long.114°15′11″E.	**VPS**	8330 kc/s. (36 metres) or 500 kc/s. (600 metres).	143 kc/s.* (2100 metres).	China Sea and North Pacific to about 1,500 miles from station.	Royal Observatory	Weather only No. 9 Supplementary Groups.	All British "A Selected Ships" within area should report in accordance with Schedule. *Alternatively see particulars on p. 113 and use wave length and times for "B Selected Ships."
South Pacific.	Sydney.	Lat. 33° 46′ 00″ S. Long.151° 03′09″ .	**VIS**	125 kc/s. (2400 metres).	143 kc/s. (2100 metres).	S. Pacific Coral and Tasman Seas and Southern Ocean between Long. 135° and 160° E.; but not within 100 miles of the coast.	Weather Melbourne and Weather Sydney.	Weather only. No. 9 Supplementary Groups.	All British "A Selected Ships" within area should report in accordance with Schedule. Reports not required for observation times not starred on Chart, p. 29, of the January 1938 number.

WIRELESS STATIONS DETAILED TO RECEIVE ROUTINE CODED WEATHER REPORTS FROM "B SELECTED SHIPS."

In cases where routine weather reports made to CQ might not be received by the appropriate station within range, indicated in this list, they should be made to that station by call sign, but so that they may be readily intercepted by all ships. 600 m. is used throughout.

Ocean.	Station.	Position.	Call Sign.	Telegraphic address of Meteorological Centre desiring information.	Information desired.	Notes.
Column No. 1.	*No. 2.*	*No. 3.*	*No. 4.*	*No. 5.*	*No. 6.*	*No. 7.*
Norwegian Sea.	Wick.	Lat. 58° 26′ 16″ N. Long. 3° 05′ 53″ W.	**GKR**	Weather London.	Weather in four universal groups.	No roll call. British "B Selected Ships" should report at routine times when North of Lat. 60°N. and eastward of Long. 7°W., and when more than 20 miles from the coasts.
North Sea.	Humber.	Lat. 53° 19′ 43″ N. Long. 0° 16′ 34″ E.	**GKZ**	Weather London.	Weather in four universal groups, optional No. 3 Supplementary Groups.	No roll call. British "B Selected Ships" should report at routine times when more than 20 miles from the coasts.
North Atlantic.	Malin Head.	Lat. 55° 21′ 45″ N. Long. 7° 20′ 30″ W.	**GMH**	Weather London.	Weather in four universal groups, optional No. 3 Supplementary Groups.	Station will indicate at 0805 G.M.T. and when additional reports of 2100 G.M.T. observations are desired, at 2005 G.M.T., with ordinary traffic calls, the names of British "B Selected Ships" and other British ships within range and North of Lat. 54° N., and West of Long. 7° W. who are desired to report weather at routine times. Thus :—Call signs of ships to report weather through G.M.H. See Section (35), p. 31 of the January 1938 number.
	Valentia.	Lat. 51° 55′ 48″ N. Long. 10° 20′ 54″ W.	**GCK**	Weather London.	Weather in four universal groups, optional No. 3 Supplementary Groups.	Station will indicate at 0825 G.M.T. and when additional reports of 2100 G.M.T. observations are desired, at 2025 G.M.T., with ordinary traffic calls, the names of British "B Selected Ships" and other British ships within range, South of Lat. 54° N., and to southward of Ireland West of Long. 7° W., who are desired to report weather at routine times. Thus :—Call signs of ships to report weather through G.C.K. See Section (35), p. 31 of the January 1938 number.
	Point Amour*	Lat. 51° 27′ 28″ N. Long. 56° 51′ 31″ W.	**VCL**	Weather Toronto	Weather only, (No. 3 Supplementary Group when convenient).	*For use during the season when Belle Isle route is open to navigation.
	St. John's N.F.	Lat. 47° 34′ 09″ N. Long. 52° 41′ 04″W.	**VON**	Weather Toronto.	Weather only, (No. 3 Supplementary Groups when convenient).	
	Cape Race.	Lat. 46° 39′ 25″ N. Long. 53° 04′ 15″ W.	**VCE**	Weather Toronto	Weather only, (No. 3 Supplementary Groups when convenient).	
North Atlantic and Mediterranean.	Gibraltar.	Lat. 36° 08′ 32″ N. Long. 5° 20′ 29″ W.	**GYW**	Meteor Gibraltar.	Weather in four universal groups only.	
Mediterranean.	Alexandria.	Lat. 31° 11′ 53″ N. Long. 29° 51′ 46″ E.	**SUH**	Meteor Heliopolis	Weather in four universal groups, optional Supplementary Groups.	
South Atlantic.	Salinas.	Lat. 0° 37′ 00″ S. Long. 47° 23′ 00″ W.	**PPL**	Meteoro Rio.	Weather only, including Supplementary Groups.	
	S. Luiz.	Lat. 2° 31′ 28″ S. Long. 44° 16′ 30″ W.	**PXM**			
	Fortaleza.	Lat. 3° 42′ 49″ S. Long. 38° 30′ 56″ W.	**PPC**			
	Natal.	Lat. 5° 45′ 27″ S. Long. 35° 11′ 42″ W.	**PXN**			
	Olinda.	Lat. 8° 00′ 55″ S. Long. 34° 50′ 40″ W.	**PPO**			

WIRELESS STATIONS DETAILED TO RECEIVE ROUTINE CODED WEATHER REPORTS FROM "B SELECTED SHIPS."

(Continued.)

In cases where routine weather reports made to CQ might not be received by the appropriate station within range, indicated in this list, they should be made to that station by call sign, but so that they may be readily intercepted by all ships. 600 m. is used throughout.

Ocean.	Station.	Position.	Call Sign.	Telegraphic address of Meteorological Centre desiring information.	Information desired.	Notes.
Column No. 1.	*No. 2.*	*No. 3.*	*No. 4.*	*No. 5.*	*No. 6.*	*No. 7.*
South Atlantic (*continued*).	Amaralina.	Lat. 13° 00′ 50″ S. Long. 38° 28′ 27″ W.	**PPA**	Meteoro Rio.	Weather only, including supplementary groups.	
	Abrolhos.	Lat. 17° 57′ 35″ S. Long. 38° 42′ 00″ W.	**PXH**			
	Victoria.	Lat. 20° 18′ 52″ S. Long. 40° 19′ 06″ W.	**PPT**			
	Rio.	Lat. 22° 59′ 19″ S. Long. 43° 11′ 26″ W.	**PPR**			
	Santos.	Lat. 23° 59′ 22″ S. Long. 46° 18′ 18″ W.	**PPS**			
	Florianopolis.	Lat. 27° 35′ 22″ S. Long. 48° 34′ 17″ W.	**PPF**			
	Juncçao.	Lat. 32° 03′ 22″ S. Long. 52° 08′ 13″ W.	**PPJ**			
	Comodoro Rivadavia.	Lat. 45° 50′ 38″ S. Long. 67° 28′ 17″ W.	**LOX**	Meteoro Comodoro.	Weather only, 4 universal and No. 6 supplementary groups.	
Red Sea and Indian Ocean.	Port Sudan.	Lat. 19° 36′ 35″ N. Long. 37° 13′ 28″ E.	**STP**	Weather Khartoum.	Weather only, 4 universal groups.	
Persian Gulf.	Basra.	Lat. 30° 32′ 39″ N. Long. 47° 47′ 04″ E.	**YIB**	Meteor. Basrah.	Weather only, 4 universal groups.	
Indian Ocean.	Jacobs (Durban).	Lat. 29° 55′ 40″ S. Long. 30° 58′ 50″ E.	**ZSD**	Met.	Weather only, 4 universal groups and first group of No. 6 Supplementary Groups.	
	Algoa Bay (Port Elizabeth).	Lat. 33° 57′ 16″ S. Long. 25° 35′ 30″ E.	**ZSQ**	Met.	Weather only, 4 universal groups and first group of No. 6 Supplementary Groups.	
	Calcutta.	Lat. 22° 33′ 31″ N. Long. 88° 20′ 16″ E.	**VWC**	Weather.	Weather only, preferably No. 9 Supplementary Groups.	
	Rangoon.	Lat. 16° 45′ 57″ N. Long. 96° 11′ 51″ E.	**VTR**	Weather.	Weather only, preferably No. 9 Supplementary Groups.	
	Madras.	Lat. 12° 59′ 17″ N. Long. 80° 10′ 56″ E.	**VWM**	Weather.	Weather only, preferably No. 9 Supplementary Groups.	
	Bombay.	Lat. 19° 04′ 55″ N. Long. 72° 49′ 54″ E.	**VWB**	Weather.	Weather only, preferably No. 9 Supplementary Groups.	See Section (35), p. 31, of the January 1938 number.
	Karachi.	Lat. 24° 51′ 05″ N. Long. 67° 02′ 32″ E.	**VWK**	Weather.	Weather only, preferably No. 9 Supplementary Groups.	See Section (35), p. 31 of the January 1938 number.
	Matara.	Lat. 6° 01′ 07″ N. Long. 80° 35′ 39″ E.	**GZP**	Weather.		
	Mombasa.	Lat. 4° 03′ 11″ S. Long. 39° 39′ 49″ E.	**VPQ**	Weather Nairobi.		
	Dar-es-Salaam.	Lat. 6° 50′ 38″ S. Long. 39° 17′ 24″ E.	**ZBZ**	Weather Nairobi.		
	Mauritius.	Lat. 20° 23′ 41″ S. Long. 57° 35′ 25″ E.	**VRS**	Observatory Mauritius.	Weather only, 4 universal groups and first of No. 6 Supplementary Groups.	
	Geraldton.	Lat. 28° 47′ 15″ S. Long. 114° 36′ 24″ E.	**VIN**	Weather Melbourne and Weather Perth	Weather only, preferably No. 9 Supplementary Groups.	When east of Long 90° E., but not within 10 miles of the coast.
	Esperance.	Lat. 33° 52′ 40″ S. Long. 121° 53′ 34″ E.	**VIE**			

WIRELESS STATIONS DETAILED TO RECEIVE ROUTINE CODED WEATHER REPORTS FROM "B SELECTED SHIPS."

(Continued.)

In cases where routine weather reports made to CQ might not be received by the appropriate station within range, indicated in this list, they should be made to that station by call sign, but so that they may be readily intercepted by all ships. 600 m. is used throughout.

Ocean.	Station.	Position.	Call Sign.	Telegraphic address of Meteorological Centre desiring information.	Information desired.	Notes.
Column No. 1.	*No. 2.*	*No. 3.*	*No. 4.*	*No. 5.*	*No. 6.*	*No. 7.*
Indian Ocean and China Sea.	Penaga (Penang).	Lat. 5° 32′ 02″ N. Long. 100° 22′ 51″E.	**VPX**	Obs. Weather Singapore.	Weather only, preferably No. 9 Supplementary Groups.	
	Paya Lebar (Singapore).	Lat. 1° 20′ 26″ N. Long. 103° 53′ 20″E.	**VPW**			
North Pacific and China Sea.	Cape d'Aguilar, Hong Kong.	Lat. 22° 12′ 39″ N. Long. 114° 15′ 11″ E.	**VPS**	Royal Observatory.	Weather only, preferably No. 9 Supplementary Groups.	
South Pacific.	Auckland.	Lat. 36° 50′ 37″ S. Long. 174° 46′ 08″ E.	**ZLD**	Weather Wellington.	Weather only, preferably No. 9 Supplementary Groups.	
	Wellington.	Lat. 41° 16′ 26″ S. Long. 174° 45′ 55″ E.	**ZLW**	Weather Wellington.	Weather only, preferably No. 9 Supplementary Groups.	
	Awarua.	Lat. 46° 30′ 47″ S. Long. 168° 22′ 24″ E.	**ZLB**	Weather Wellington.	Weather only, preferably No. 9 Supplementary Groups.	
	Chatham Island.	Lat. 43° 57′ 28″ S. Long. 176° 34′ 25″ W.	**ZLC**	Weather Wellington.	Weather only, preferably No. 9 Supplementary Groups.	
	Rarotonga.	Lat. 21° 11′ 52″ S. Long. 159° 48′ 52″ W.	**ZKR**	Weather Wellington.	Weather only, preferably No. 9 Supplementary Groups.	
	Apia.	Lat. 13° 49′ 46″ S. Long. 171° 45′ 20″ W.	**ZMA**	Weather Wellington.	Weather only, preferably No. 9 Supplementary Groups.	
	Suva.	Lat. 18° 08′ 43″ S. Long. 178° 27′ 48″ E.	**VRP**	Weather Suva.	Weather in four universal groups, optional supplementary groups.	See Section (35), p. 31 of the January 1938 number.
	Thursday I.	Lat. 10° 35′ 14″ S. Long. 142° 12′ 37″ E.	**VII**	Weather Melbourne and Weather Brisbane	Weather only, preferably No. 9 Supplementary Groups	When west of Long. 160° E., but not within 100 miles of the coast.
	Townsville.	Lat. 19° 16′ 09″ S. Long. 146° 49′ 47″ E.	**VIT**		Weather only, preferably No. 9 Supplementary Groups.	
	Brisbane.	Lat. 27° 25′ 34″ S. Long. 153° 07′ 19″ E.	**VIB**		Weather only, preferably No. 9 Supplementary Groups.	
	Melbourne.	Lat. 37° 46′ 56″ S. Long. 144° 52′ 09″ E.	**VIM**	Weather Melbourne	Weather only, preferably No. 9 Supplementary Groups.	When between Long. 90° E. and 160° E., but not within 100 miles of the coast.
	Adelaide.	Lat. 34° 51′ 14″ S. Long. 138° 31′ 55″ E.	**VIA**	Weather Melbourne and Weather Adelaide	Weather only, preferably No. 9 Supplementary Groups.	

II. WIRELESS WEATHER SIGNALS.

Bulletins.

It is necessary to make careful distinction between wireless weather reports and weather forecasts.

A wireless weather report is a statement, in plain language or code, of the observed conditions prevailing at a place at a given time.

A weather forecast is a statement, usually in plain language, of weather which may be expected at a place or over an area in the near future.

For forecasts issued to shipping by wireless it is usual to publish full descriptions giving abbreviated names of areas with prescribed limits and the length of period; if such published description is not given, the place, or area and the period to which the forecasts apply are included in the message.

SOUTH WEST AFRICA AND UNION OF SOUTH AFRICA.

Weather Shipping Bulletins.

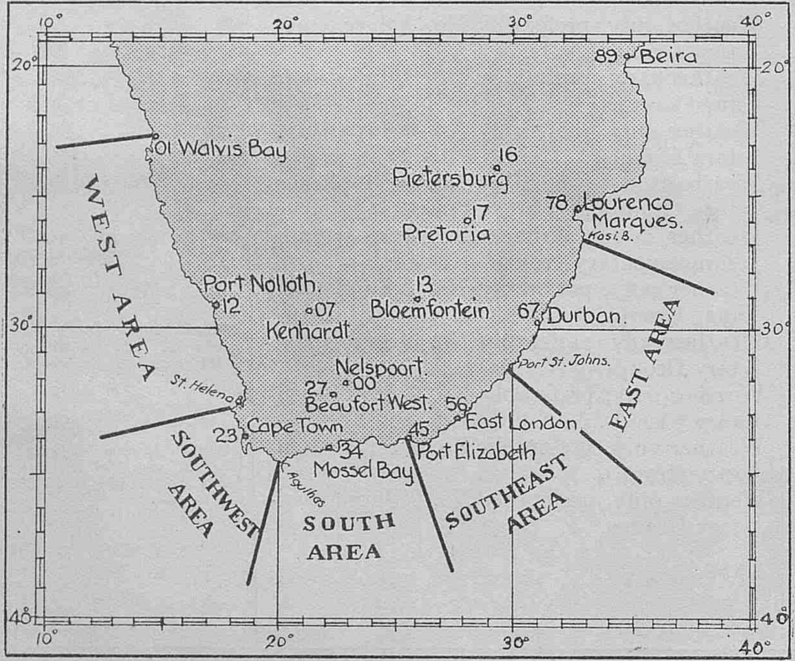
The following W/T stations transmit weather Reports in code giving actual observations at 0630 G.M.T. at coast stations and Forecasts of Weather in plain language for coastal areas indicated on the Chart below.

Station reports are made in the International Ships Wireless Weather Telegraphy Code in three five-figure groups.

Instructions for decoding.

To decode these reports the tables given in M.O. 329 are required (Decode for Use with International Code for Wireless Weather messages from ships [Fifth edition], obtainable from H.M. Stationery Office, price 6d.).

Chart showing Stations and Forecast Areas for Weather Shipping Bulletins South West Africa and Union of South Africa.



The Key letters are fully described on p. 37 of the January, 1938, number, and in M.O. 329, with the exception of symbol II. II = the distinguishing figures of the coast stations, which are given on the chart.

Key letters—IICAK DDFww PPVTT.

Explanation of Chart.

The numbers alongside the names of the stations on the chart are distinguishing numbers.

The Areas for which weather forecasts are made are indicated in large print.

W/T Station and Position approx.		Call Sign.	Wave-length.	Times of Transmission.		Station distinguishing figures (*see* Chart).
Latitude.	Longitude.			Station reports. G.M.T.	Forecasts. G.M.T.	
Walvis Bay		**ZSV**	625	0850	1250	23, 12, 01, 00.
22° 58′ S.	14° 30′ E.					
Capetown (Slangkop)		**ZSC**	600	0930	1220	56, 45, 34, 23, 12, 01.
34° 09′ S.	18° 19′ E.		2100	0935	—	01, 07, 12, 13, 16, 17, 23, 27, 34, 45, 56, 67, 78, 89.
Port Elizabeth (Algoa Bay).		**ZSQ**	600	0820	1230	67, 56, 45, 34, 23.
33° 57′ S.	25° 35′ E.					
Durban (Jacobs)		**ZSD**	600	0810	1205	89, 78, 67, 56, 45.
29° 56′ S.	30° 59′ E.		2100	0900	—	01, 07, 12, 13, 16, 17, 23, 27, 34, 45, 56, 67, 78, 89.

Sample Message.

(Broadcast by Capetown, Slangkop W/T, 29th March, 1933.)

Station Reports.

56520	*20300*	*13772*
45910	*00003*	*13670*
34001	*28205*	*13666*
23021	*08103*	*13563*
12012	*28104*	*16155*
0100X	*00003*	*14667*

Forecast.

Coast forecast, Wednesday 29th March, Cloudy with local fogs in west, south-west, south and south-east, fine in east, light to moderate, north-westerly to south-westerly winds, sea slight to moderate.

III.—Wireless Time Signals.

Cape Town (Slangkop) W/T Station, call sign **ZSC,** Latitude 34° 09′ S., 18° 19′ E. (approx.), broadcasts on a wavelength of 600 metres (I.C.W.) time signals which are actuated automatically from the Royal Observatory at the Cape by direct land line.

The time signals are broadcast according to the New International System of W/T time signals and the procedure is as follows :—

G.M.T.

H. M. S. H. M. S.

20 56 05 to 20 56 50 ▬ ▬ ▬ repeated 5 times at 10 second intervals.

57 00 ,, 57 50 ▬ • • ▬ repeated 10 times at 5 second intervals.

G.M.T. H. M. S.		G.M.T. H. M. S.	Signal.	
20 57 55	to	20 58 00	55 56 57 58 59 60 ● ● ● ● ● ●	*Time signal.*
58 08	,,	58 10	▬ ●	
58 18	,,	58 20	▬ ●	
58 28	,,	58 30	▬ ●	
58 38	,,	58 40	▬ ●	
58 48	,,	58 50	▬ ●	
58 55	,,	59 00	55 56 57 58 59 60 ● ● ● ● ● ●	*Time signal.*
59 06	,,	59 10	▬ ▬ ●	
59 16	,,	59 20	▬ ▬ ●	
59 26	,,	59 30	▬ ▬ ●	
59 36	,,	59 40	▬ ▬ ●	
59 46	,,	59 50	▬ ▬ ●	
20 59 55	,,	21 00 00	55 56 57 58 59 60 ● ● ● ● ● ●	*Time signal.*

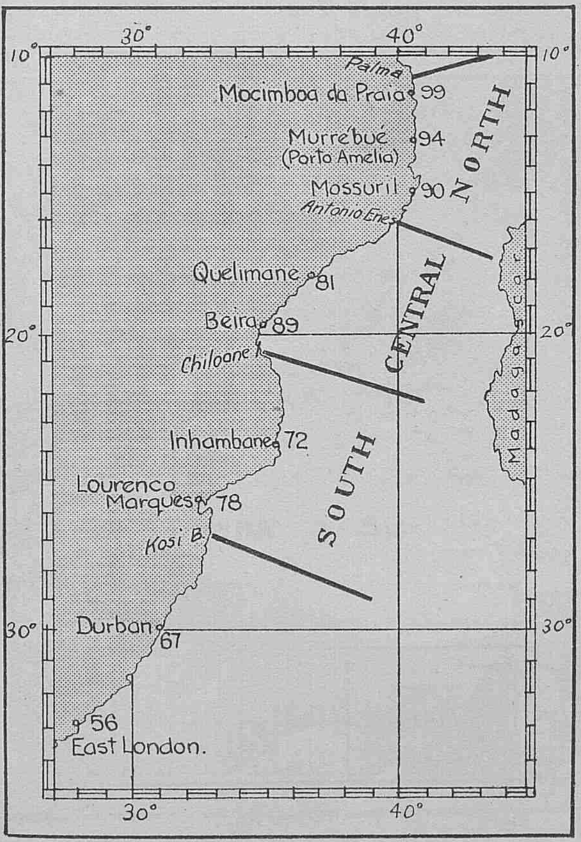
PORTUGUESE EAST AFRICA.

II.—Weather Shipping Bulletins.

The following W/T Stations transmit Weather Reports on 600 m. in code, giving actual observations at 0700 G.M.T. at coast stations, in the same way as those given for South West Africa and Union of South Africa. For key and explanation *see* page 114.

W/T Station.	Position approx.		Call Sign.	Times of Transmission.		Station distinguishing figures (*see* Chart).
	Latitude.	Longitude.		Station reports. G.M.T.	Forecasts. G.M.T.	
Lourenço Marques	25° 58′ S.	32° 36′ E.	**CQE**	0910	1310	56, 67, 72, 78, 89.
Mozambique ...	15° 02′ S.	40° 45′ E.	**CQF**	0900	None.	72, 78, 81, 89, 90, 94, 99.

Chart showing Stations and Forecast Areas for Weather Shipping Bulletin, Portuguese East Africa.



III.—Wireless Time Signals.

Lourenço Marques, W/T station, Lat., 25° 58′ 05″ S., Long., 32° 35′ 39″ E., call sign **CQE,** wavelength 600 metres, and **Polana W/T station,** Lat., 25° 57′ 40″ S., Long., 32° 35′ 59″ E., call sign **CRAP** wavelength 2,400 metres, C.W., transmit, simultaneously, time signals automatically by means of the pendulum clock at Campos Rodrigues Observatory. The new International system of W/T time signals is used.

The transmitting times are :—

	G.M.T. h. m. s.		G.M.T. h. m. s.
From	7 57 00	to	8 00 00
,,	18 57 00	,,	19 00 00

The procedure as regards each series of signals is as follows :—

G.M.T. h. m. s.		G.M.T. h. m. s.	Signal.	
7 18 } 57 00	to	7 18 } 57 50	▬ ● ● ▬ ▬ ● ● ▬ ▬ ● ● ▬ Prevenção. Sinais feitos à mão (Prepare. Time signal coming).	
57 55	,,	58 00	55 56 57 58 59 60 ● ● ● ● ● ●	*Time signal.*
58 08	,,	58 10	▬ ●	
58 18	,,	58 20	▬ ●	
58 28	,,	58 30	▬ ●	
58 38	,,	58 40	▬ ●	
58 48	,,	58 50	▬ ●	
58 55	,,	59 00	55 56 57 58 59 60 ● ● ● ● ● ●	*Time signal.*
59 06	,,	59 10	▬ ▬ ●	
59 16	,,	59 20	▬ ▬ ●	
59 26	,,	59 30	▬ ▬ ●	
59 36	,,	59 40	▬ ▬ ●	
59 46	,,	59 50	▬ ▬ ●	
7 18 } 59 55	,,	8 19 } 00 00	55 56 57 58 59 60 ● ● ● ● ● ●	*Time signal.*

Note.—The error of the Observatory clock is stated never to exceed a few hundredths of a second.

Occasionally Campos Rodrigues observatory will transmit other time signals, which must not be confused with those given above. These signals belong to the category of rhythmic time signals, and will consist of several long series of dots.

MADAGASCAR.

II.—Wireless Storm Warnings.

CYCLONE warnings are broadcast when necessary by the following stations on a wavelength of 600 metres, in each case :—

Majunga : Latitude 15° 43′ S., Longitude 46° 20′ E., Call Sign **FIO.,** Times of transmission, 0500, 1630 G.M.T.

Diégo Suarez : Latitude 12° 15′ S., Longitude 49° 26′ E., Call Sign **FIL.,** Times of transmission, 0430, 1600 G.M.T.

Tamatave : Latitude 18° 09′ S., Longitude 49° 26′ E. Call Sign, **FIS.,** Times of transmission, 0415, 1615 G.M.T.

Tulear : Approx. Latitude 23° 21′ S., Longitude 43° 40′ E., Call sign **FIT** Times of transmission 0445, 1645 G.M.T.

The warning will be broadcast at every even hour, in addition to the above times, during the probable passage of the cyclone when within the range of the W/T Stations, by Majunga W/T station and Tulear W/T station, alternately, in the case of a cyclone affecting the Mozambique Channel (*ie.* Majunga at 0000,0400 G.M.T., etc., etc., and Tulear at 0200,0600 G.M.T., etc., etc.), and alternately by Diégo Suarez and

Tamatave W/T stations in the case of a cyclone affecting the area north-east and east of Madagascar (*ie.* Diégo Suarez at 0000,0400 G.M.T. etc., etc. and Tamatave at 0200,0600 G.M.T. etc., etc.

The warning will be preceded by the Safety Signal **TTT (— — —)** repeated ten times at short intervals on full power. The warning will be broadcast one minute after the Safety Signal, and will be repeated three times at intervals of ten minutes.

If the safety Signal *only* is broadcast it will indicate, in the absence of precise information, that there is reason to expect the passage of a cyclone.

During the whole period of this service Diégo Suarez, Tamatave and Tulear W/T stations will remain permanently on watch.

MAURITIUS.

II.—Wireless Weather Bulletins.

Mauritius W/T Station approx. position Latitude 20° 24′ S., Longitude 57° 35′ E.

Call sign **VRS.**

Wavelength 600 metres.

Time of transmission (during cyclone season only November to April).

0830 G.M.T.—Weather report in code giving 0500 G.M.T. observations at the stations given below, followed by a general statement of existing weather conditions.

Station reports in International Ships Wireless Weather Telegraphy Code in two five-figure groups preceded by name of station.

To decode these reports the tables given in M.O. 329 are required. The Key Letters are fully described on p. 37 of the January, 1938, number, and in M.O. 329.

Key letters—DDFww PPVTT.

Observation stations :—

Station.	*Position (approx.)* *Latitude.*	*Longitude.*
Seychelles	4° 34′ S.	55° 28′ E.
Mauritius	20° 11′ S.	57° 27′ E.
Rodriguez	19° 40′ S.	63° 30′ E.

Note.—When the weather is cyclonic additional messages are issued when fresh information becomes available.

INDIA, CEYLON AND BURMA.

II.—Wireless Weather Bulletins.

The following W/T Stations transmit Weather Bulletins containing a brief summary of weather conditions and reports in code, giving actual observations at 8 a.m. local time from Indian and Ceylon stations; 0400 G.M.T. from Gulf of Oman and Mekran coast stations and 7 a.m. local time for Aden.

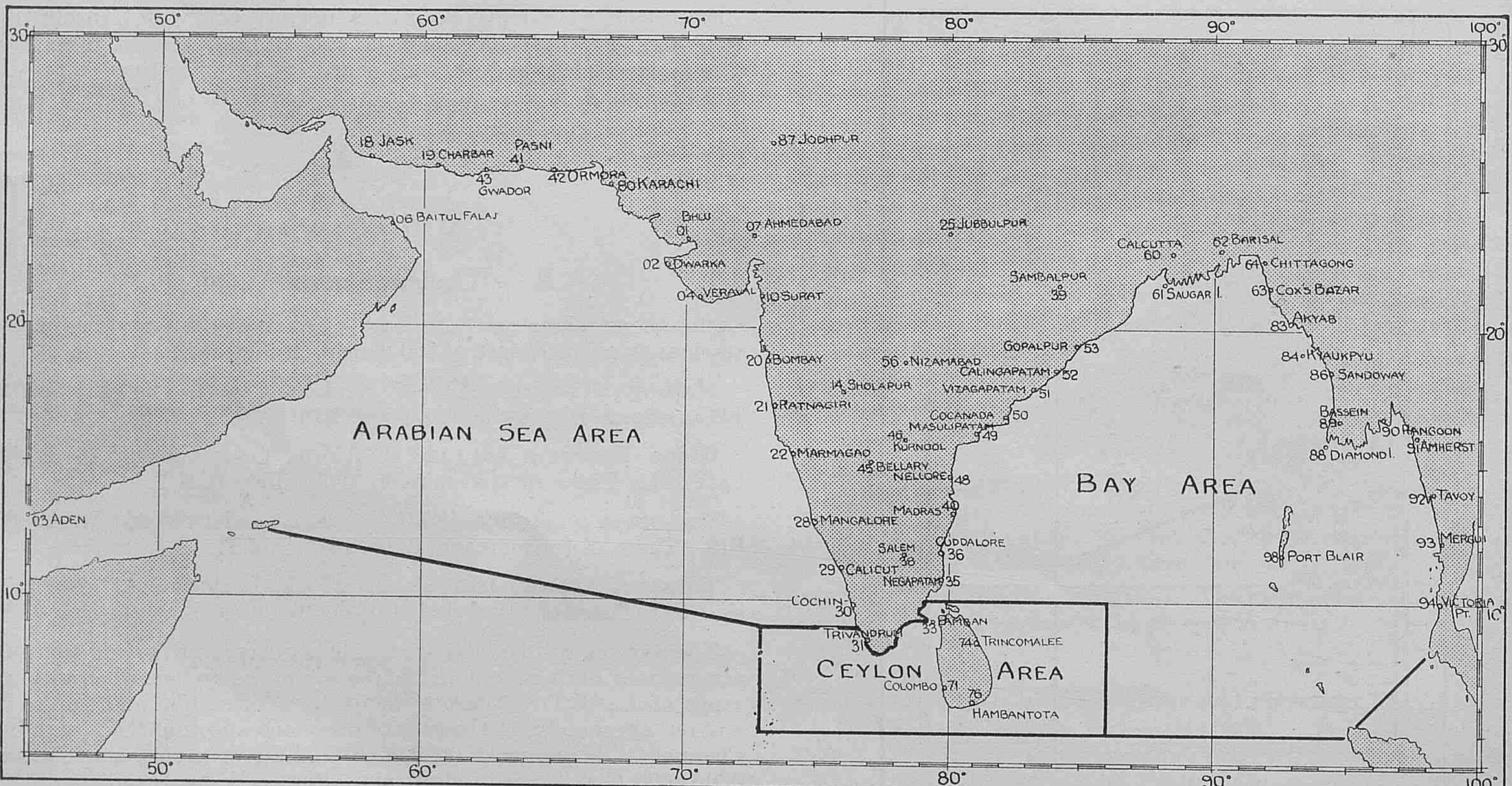
Station reports in International Ships Wireless Weather Telegraphy Code in three five-figure groups.

To decode these reports the tables given in M.O. 329 are required. The Key letters are fully described on p. 37 of the January, 1938, number, and in M.O. 329, with the exception of II. II = index figure of coast station, see Chart below.

Key letters—IICKW DDFww PPVTT.

W/T Station.	Call Sign.	Wave-length, metres.	Position (approx.).		Times of Trans-mission.	Area covered.
			Lati-tude. N.	Longi-tude. E.		
Bombay	**VWB**	1,000 I.C.W.	19° 05′	72° 50′	0800	Arabian Sea.
Calcutta	**VWC**	2,000 C.W.	22° 34′	88° 20′	0830	Bay of Bengal.
Matara	**GZP**	2,000 C.W.	6° 01′	80° 36′	0630*	Arabian Sea, Bay of Bengal and Ceylon.

* Information too late for inclusion in 0630 G.M.T. message is sent out at 0948 G.M.T.


50°
60°
70°
80°
90°
100°
30
20
10
18 Jask
19 Charbar
Pasni 41
43 Gwador
42 Ormora
80 Karachi
06 Baitul Falaj
Bhuj 01
02 Dwarka
04 Veraval
10 Surat
87 Jodhpur
07 Ahmedabad
25 Jubbulpur
Calcutta 60
62 Barisal
64 Chittagong
61 Saugar I.
63 Cox's Bazar
Sambalpur 39
83 Akyab
84 Kyaukpyu
86 Sandoway
Bassein 89
90 Rangoon
91 Amherst
88 Diamond I.
20 Bombay
56 Nizamabad
Gopalpur 53
Calingapatam 52
14 Sholapur
Vizagapatam 51
21 Ratnagiri
Cocanada 50
Masulipatam 49
46 Kurnool
22 Marmagao
45 Bellary
Nellore 48
Madras 40
28 Mangalore
Salem 38
Cuddalore 36
29 Calicut
Negapatam 35
Cochin 30
Trivandrum 31
33 Pamban
74 Trincomalee
Colombo 71
76
Hambantota
92 Tavoy
93 Mergui
98 Port Blair
94 Victoria Pt.
03 Aden
Arabian Sea Area
Bay Area
Ceylon Area

A brief summary of weather conditions is broadcast daily from stations below at the following times :—

Time G.M.T.	Station.	Position (approx.).		Call Sign.	Wavelength, metres.
		Latitude.	Longitude.		
0830 and 1630	**Karachi...**	24° 51′ N	67° 03′ E.	**VWK**	1,550 (C W.)†
	Calcutta*	22° 34′ N.	88° 20′ E.	**VWC**	2,000 (C.W.)
0800 and 1600	**Bombay...**	19° 05′ N.	72° 50′ E.	**VWB**	1,000 (spk.)
0900 and 1700	**Madras ...**	12° 59′ N.	80° 11′ E.	**VWM**	1,000 (I.C.W.)
	Rangoon	16° 46′ N.	96° 12′ E.	**XYR**	1,200 ,,
0948 and 1748	**Aden ...**	12° 49′ N.	45° 02′ E.	**GZQ**	2,000 (C.W.)
	Matara ...	6° 01′ N.	80° 36′ E.	**GZP**	2,000 ,,
0600* 1330* and 1700‡	**Colombo**	6° 55′ N.	79° 53′ E.	**VPB**	2,300 ,, 600 ,, 600 ,,

* After the time signal.

† In the event of interruption on the wavelength of 1,550 m. the message will be broadcast on 600 m.

‡ 1700 G.M.T. message broadcast when necessary.

Wireless Storm Warnings.

The following stations broadcast messages containing cyclone warnings immediately on receipt from the Indian Meteorological Department and at the following times. Each transmission is preceded by the W/T Safety Signal — — — (TTT).

Karachi	call sign	**VWK**	at 0030, 0430, 1230 and 2030 G.M.T. Wavelength 600 m. I.C.W.
Calcutta	,, ,,	**VWC**	
Bombay	call sign	**VWB**	at 0000, 0400, 1200 and 2000 G.M.T. Wavelength 600 m. Spk.
Madras	call sign	**VWM**	at 0100, 0500, 1300 and 2100 G.M.T. Wavelength 600m. I.C.W.
Rangoon	,, ,,	**XYR**	
Aden	call sign	**GZQ**	at 0148, 0548, 1348 and 2148 G.M.T. Wavelength 600 m. I.C.W.
Matara	,, ,,	**GZP**	

These Weather Bulletins and Storm Warnings give brief information of the prevailing weather conditions in the Bay of Bengal and Arabian Sea.

III.—Wireless Time Signals.

Station.	Call Sign.	Wave-length, metres.	G.M.T. of Time Signal.	System.
Calcutta. Lat. 22° 33′ 31″ N. Long. 88° 20′ 16″ E.	**VWC**	2,000 C.W.	0827–0830 1627–1630	*See* FIGURE 1.
Colombo. Lat. 6° 55′ 14″ N. Long. 79° 52′ 46″ E.	**VPB**	2,300 C.W. 600 C.W.	0557–0600 1327–1330	*See* FIGURE 1.

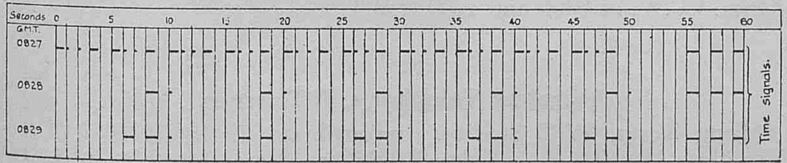


Figure 1.

NOTE.—*Calcutta.*—(1) Preliminary signals sent two minutes before transmission of Time Signal proper, the words " Ordinary time signals," and the signal " Wait " (· — · · ·); all sent by hand.

(2) Signals automatically controlled from Alipore Observatory.

(3) Time Signal accurate to within 0·5 sec.

(4) Should there be any inaccuracy, the Time Signal will be followed by the " erase " signal and the words " signal failed."

Colombo.—(1) Preliminary signals sent two minutes before transmission of Time Signal proper, CQ de VPB (repeated 3 times) " Time Signal, Wait " (· — · · ·).

(2) Actual time signals automatically controlled from Colombo Observatory (Lat. 6° 54′ 18″ N., Long. 79° 52′ 10″ E.), the preliminary signals being sent by hand.

STRAITS SETTLEMENTS.

II.—Wireless Weather Bulletins.

Singapore W/T Station, Latitude 1° 23′ 28″ N., Longitude 103° 51′ 44″ E., call sign **GYL.**

Wavelengths 3,400 m., 78.2 m., and 35.8 m. simultaneously.

Times of transmission 0418 and 1118 G.M.T.

Weather report in code giving actual observations of 0000 and 0600 G.M.T. respectively at the stations below.

Weather reports in code from ships.

General statement of weather conditions and forecast for the area Latitude 10° N., to 5° S., Longitude 95° E. to 120° E. (given in the 0418 G.M.T. message only).

The international Ships Wireless Weather Telegraphy Code is used. To decode these reports the tables given in M.O. 329 are required (Decode for use with International Code for Wireless Weather messages from ships (fifth edition), obtainable from His Majesty's Stationery Office, price 6d.).

The Key letters are fully described on page 37 of the January, 1938, number and in M.O. 329, with the exception of symbol III meaning the distinguishing figures of the coast stations.

Key letters IIIAC, DDFww, PPVTT.

Distinguishing Figures.	*Station.*	*Position approx.*	
		Latitude.	*Longitude.*
*494	Victoria Point ...	10° 01′ N.	98° 33′ E.
*588	Phuket	7° 52′ N.	98° 24′ E.
580	Bangkok ...	13° 45′ N.	100° 30′ E.
583	Maesord	16° 40′ N.	98° 33′ E.
586	Bandon	9° 07′ N.	99° 17′ E.
594	Sandakan ...	5° 50′ N.	118° 07′ E.
595	Labuan	5° 15′ N.	115° 08′ E.
596	Kuching	1° 35′ N.	110° 20′ E.
601	Ipoh	4° 34′ N.	101° 06′ E.
603	Singapore ...	1° 19′ N.	103° 52′ E.
605	Kota Bahru ...	6° 08′ N.	102° 15′ E.
618	Christmas I. ...	10° 25′ S.	105° 43′ E.
620	Cape St. Jacques	10° 20′ N.	107° 05′ E.
639	Padaran	11° 21′ N.	109° 01′ E.
862	Manila	14° 35′ N.	120° 59′ E.
882	Iloilo	10° 42′ N.	122° 34′ E.
888	Zamboanga ...	6° 54′ N.	122° 05′ E.
900	Terempa ...	3° 12′ N.	106° 15′ E.
901	Kutaradja ...	5° 32′ N.	95° 20′ E.
906	Muntok	2° 05′ S.	105° 13′ E.
916	Batavia	6° 11′ S.	106° 50′ E.
929	Surabaja ...	7° 16′ S.	112° 45′ E
955	Bandjermasin ...	3° 20′ S.	114° 40′ E
964	Kupang	10° 10′ S.	123° 34′ E.
993	Hatien	10° 23′ N.	104° 29′ E.

* 588 will be included if observations of 494 are not available.

FRENCH INDO-CHINA.

II.—Wireless Weather Bulletins.

The following W/T Stations broadcast a weather bulletin on a wavelength of 600 metres spark. This bulletin is sent *en clair* and gives the general barometric situation in the area off the coasts of Indo-China and China Sea, and a weather forecast which is valid until 0900 G.M.T. the following day.

W/T Station.	Call Sign.	Position (approx.).		Times of Transmission. G.M.T.
		Latitude. N.	Longitude. E.	
Mitho	**FRM**	10° 22′	106° 22′	1220
Padaran	**FRR**	11° 22′	109° 01′	1350
Tourane	**FRT**	16° 05′	108° 13′	1320
Kien an	**FRK**	20° 48′	106° 37′	1250
Fort Bayard ...	**FRF**	21° 12′	110° 24′	1350

FORMOSA.

II.—Wireless Weather Bulletins.

Keelung W/T Station, approximate Latitude 25° 08′ N., Longitude 121° 45′ E., call sign **JFK,** wavelength 600 metres, broadcasts a weather forecast, issued by Taihoku Meteorological Observatory, *en clair*, in English, at 0230 and 1920 G.M.T. The message is preceded by the signal CQ CQ CQ and contains the direction and force of the wind (Beaufort) and general weather conditions for the following day for the N. and E. coasts of Formosa and the Formosa Channel.

Tainan W/T Station, approx. Latitude 21° 55′ N., Longitude 120° 51′ E., call sign **JFG** repeats the above forecast on 600 m. I.C.W. at 0300 and 2020 G.M.T.

Example.—N.E. Monsoon moderate, cloudy, some rain, Northern and Eastern coast areas ; N.E. Monsoon strong, cloudy Formosa Channel.

Wireless Storm Warnings.

Keelung W/T Station, call sign **JFK,** wavelength 600 metres, at 0230 and 1920 G.M.T., broadcasts storm warnings *en clair* in English commencing CQ CQ CQ, giving date and hour of observation, type of storm, position of centre, direction of motion and brief remarks. The message may also contain information concerning strong winter monsoons whenever a sudden threatening change is anticipated off the N. and E. coast of Formosa or in the Formosa Channel.

HONG KONG.

II.—Wireless Weather Bulletins.

Stonecutters I. W/T Station approximate position Latitude 22° 19′ N., Longitude 114° 09′ E.

Call signs **GYP,** wavelength 2650 m. C.W.
GZO 6, wavelength 35.5 m. C.W. } simultaneously.

Times of transmission :—

0300 and 1200 G.M.T.—Weather reports in code giving actual observations at 2200 G.M.T. and 0600 G.M.T. respectively at a number of stations in the following list and a brief Forecast *en clair* for the following Districts :—

A. Shanghai to Turnabout.
B. Turnabout to Hong Kong.
C. Hong Kong and neighbourhood.
D. Hong Kong to Hainan Straits.
E. North part of China Sea (between Hong Kong and latitude 16° N.).

Station reports in International Ships Wireless Weather Telegraphy Code. To decode these reports the tables given in the Decode M.O. 329 are required. The Key letters are fully described on p. 37 of the January, 1938, number and in M.O. 329 with the exception of III.

III = station distinguishing figures.

Key letters used for station reports :—IIIAW DDFww PPVTT.

Observation Stations.

Code Letter.	Code No.	Station.	Position.	
			Latitude.	Longitude.
ZI	—	Chemulpo	37° 26′ N.	126° 37′ E.
—	734	Tientsin	39° 09′ N.	117° 09′ E.
—	739	Chefoo	37° 33′ N.	121° 30′ E.
NG	—	Nagasaki	32° 44′ N.	129° 52′ E.
NA	—	Oshima	28° 23′ N.	129° 30′ E.
—	769	Gutzlaff	30° 48′ N.	122° 10′ E.
—	772	Hankow	30° 36′ N.	114° 20′ E.
TT	—	Bonin I.	27° 05′ N.	142° 11′ E.
IS	—	Ishigakijima ...	24° 20′ N.	124° 10′ E.
—	781	Changsha	28° 12′ N.	112° 47′ E.
—	803	Amoy	24° 28′ N.	118° 05′ E.
TA	—	Taihoku	25° 02′ N.	121° 31′ E.
HO	—	Pescadores	23° 32′ N.	119° 33′ E.
—	812	Gap Rock	21° 49′ N.	113° 56′ E.
—	814	Pratas I.	20° 40′ N.	116° 47′ E.
—	621	Fu Line	20° 48′ N.	106° 38′ E.
—	625	Tourane	16° 08′ N.	108° 17′ E.
—	620	Cape St. Jacques ...	10° 20′ N.	107° 05′ E.
—	850	Basco	20° 28′ N.	121° 59′ E.
—	862	Manila	14° 35′ N.	120° 59′ E.
—	890	Surigao	9° 48′ N.	125° 29′ E.
GN	—	Yuensan	39° 11′ N.	127° 26′ E.
—	744	Tsingtao	36° 03′ N.	120° 20′ E.
ST	—	Quelpart	33° 20′ N.	126° 30′ E.
KA	—	Kagoshima ...	31° 34′ N.	130° 33′ E.
—	763	Nanking	32° 07′ N.	118° 47′ E.
—	770	Ichang	30° 42′ N.	111° 16′ E.
SN	—	Saipan	15° 14′ N.	145° 46′ E.
NH	—	Naha	26° 13′ N.	127° 41′ E.
—	777	Kiukiang	29° 44′ N.	116° 08′ E.
—	801	Foochow	26° 03′ N.	119° 39′ E.
KO	—	Koshun	22° 00′ N.	120° 45′ E.
—	810	Hong Kong ...	22° 18′ N.	114° 10′ E.
—	989	Fort Bayard ...	21° 03′ N.	110° 28′ E.
—	638	Dong Hoi	17° 29′ N.	106° 37′ E.
—	639	Padaran	11° 21′ N.	109° 01′ E.
—	852	Aparri	18° 22′ N.	121° 38′ E.
—	882	Iloilo	10° 42′ N.	122° 34′ E.
—	807	Canton	23° 08′ N.	113° 27′ E.
—	811	Macao	22° 11′ N.	113° 33′ E.
—	806	Swatoro	23° 20′ N.	116° 43′ E.
—	874	Legaspi	13° 09′ N.	123° 45′ E.
—	873	Guam	13° 24′ N.	144° 38′ E.
—	893	Yap. W. Carolines...	9° 29′ N.	138° 08′ E.

Cape d'Aguilar W/T Station, approximate position Latitude 22° 13′ N., Longitude 114° 15′ E. Call sign **VPS,** repeats the forecast *en clair* given by **Stonecutters I. W/T** station on a wavelength of 600 m. I.C.W. at 0400 and 1200 G.M.T.

Wireless Telephony, R/T Issues.

Hong Kong, W/T Station, approximate Latitude 22° 17′ N., Longitude 114° 09′ E., call sign **ZBW,** broadcasts by word of mouth weather reports and forecasts at 0500 and 1200 G.M.T. on 355 m. (R.T.) for the district Hong Kong and neighbourhood.

Wireless Storm Warnings.

Stonecutters I. W/T Station call signs **GZP** on 2,650 metres C.W. and **GZO 6** on 35·5 metres I.C.W. broadcasts Typhoon warnings with the weather bulletins sent out at 0300 and 1200 G.M.T.

Cape d'Aguilar W/T Station, approximate Latitude 22° 13′ N., Longitude 114° 15′ E., call sign **VPS,** broadcasts typhoon warnings on 600 m. I.C.W. and 36 m. C.W., on receipt and at 18 minutes past each of the two subsequent hours.

Wireless Telephony R/T Issues.

Hong Kong W/T Station, approximate Latitude 22° 17′ N., Longitude 114° 09′ E., call sign **ZBW,** wavelength 355 m. R/T, broadcasts by word of mouth typhoon warnings on receipt and at the two subsequent hours. When a typhoon is definitely threatening Hong Kong the warnings are sent as frequently as possible, usually at two hourly intervals.

III.—Wireless Time Signals.

Wireless time signals controlled by the Royal Observatory, Hong Kong, are broadcast from **Cape d'Aguilar W/T Station,** Latitude 22° 12′ 39″ N., Longitude 114° 15′ 11″ E., call sign **VPS,** on wavelengths of 600 m. I.C.W. and 36 m. C.W. at the following times :—

	G.M.T.						
	h.	m.	s.		h.	m.	s.
	1	55	00	to	2	00	00
and from	12	55	00	to	13	00	00

The time signals consist of dots (• • • • • etc.) each of about 0·2 seconds duration, sent at every second, the 28th, 29th, 54th, 55th, 56th, 57th, 58th and 59th seconds being omitted for the purpose of identifying the signals.

Preliminary warning signals are transmitted between 1h. 53m. and 1h. 54m., and between 12h. 53m. and 12h. 54m., G.M.T., as follows :—" CQ de VPS. HK Time wait."

CHINA.

II.—Wireless Weather Bulletins.

Shanghai W/T Station, approximate Latitude 31° 13′ N., Longitude 121° 28′ E., call sign **FFZ,** broadcasts weather forecasts *en clair*, for China and the China Seas, on a wavelength of 600 metres and 36m. C.W. simultaneously, repeated immediately on 2100 metres (C.W.), at 0300, 0900, 1400 and 2000 G.M.T.

Wireless Storm Warnings.

Shanghai W/T Station, call sign **FFZ,** broadcasts typhoon and gale warnings, when necessary after the weather bulletins at 0300 (after Time Signal), 0900 (after Time Signal), 1400 and 2000 G.M.T. The warnings are broadcast *en clair* and give information concerning the position of the centres of typhoons or continental depressions, for China and the China Seas.

Wavelength 600 metres (I.C.W.), and 36m. C.W. simultaneously, repeated immediately on 2100 metres (C.W.).

The warnings are also broadcast at 0945 G.M.T. call sign **FFZ2** on a wavelength of 30·5 m. C.W.

III.—Wireless Time Signals.

Wireless time signals controlled by Zikawei Observatory are broadcast by **Shanghai W/T Station,** Latitude 31° 13′ 16″ N., Longitude 121° 27′ 47″ E., call sign **FFZ,** on a wavelength of 600 metres, I.C.W and **FFZI** on 36·5m. C.W. simultaneously after the general call (QST de FFZ) " Shanghai time signal ", in the following manner .—

G.M.T.							Signal.
h.	m.	s.		h.	m.	s.	
2 8	55	00	to	2 8	56	45	• • • ▬ • • • ▬ • • • ▬
	57	00	,,		57	50	▬ • • ▬ ▬ • • ▬ ▬ • • ▬ etc.
	57	55	,,		58	00	55 56 57 58 59 60 • • • • • • *Time signal.*
	58	08	,,		58	10	▬ •
	58	18	,,		58	20	▬ •
	58	28	,,		58	30	▬ •
	58	38	,,		58	40	▬ •
	58	48	,,		58	50	▬ •
	58	55	,,		59	00	55 56 57 58 59 60 • • • • • • *Time signal.*
	59	06	,,		59	10	▬ ▬ •
	59	16	,,		59	20	▬ ▬ •
	59	26	,,		59	30	▬ ▬ •
	59	36	,,		59	40	▬ ▬ •
	59	46	,,		59	50	▬ ▬ •
2 8	59	55	,,	3 9	00	00	55 56 57 58 59 60 • • • • • • *Time signal.*

▬ = 1 sec.; • = 0·2 sec.

JAPAN.

II.—Wireless Storm Warnings.

The **Central Meteorological Observatory, Tokyo, W/T Station,** Latitude 35° 39′ N., Longitude 139° 45′ E., call sign, **JGA,** Okinawa Meteorological Observatory W/T Station, Latitude 26° 12′ N., Logitude 127° 39′ E., call sign, **JGH,** and Kobe Marine Obervatory W/T Station, Latitude 34° 41′ N., Longitude 135° 11′ E., call sign **JTJ,** broadcast storm warnings *en clair*, in English, after the weather bulletins. The warnings contain the following information :—approximate position of typhoon (or cyclone), the direction in which it is moving, or expected movement, or information concerning severe gales, or duration of monsoon, over Japan and the neighbouring seas.

Tokyo, JGA.
Time 0450, 1100 and 2300 G.M.T.
Okinawa, JGH.
Time 0020, 0620 and 1150 G.M.T.
Kobe, JTJ.
Time 0530, 1130 and 2330 G.M.T.
Wavelength 4000 metres (C.W.).

In cases of urgency they will be broadcast immediately on 600 metres I.C.W. and repeated at the end of the next compulsory silent period.

AUSTRALIA.

II.—Wireless Weather Bulletins.

Weather reports and forecasts issued by the Commonwealth Meteorological Bureau are broadcast *en clair* by Australian W/T stations as follows, special reports and warnings being broadcast on 600 metres by the W/T Stations serving the area affected, when dangerous weather prevails or is expected.

Perth W/T Station.

Approximate, Latitude 32° 02′ S. Longitude 115° 50′ E.
Call sign **VIP.**
At 0448 and 1300 G.M.T., on a wavelength 600 metres (I.C.W.).
At 0300 G.M.T., on 2,400 metres (C.W.).

Broome W/T Station.

Approximate, Latitude 17° 58′ S. Longitude 122° 14′ E.
Call sign **VIO,** wavelength 600 metres.
Times of transmission 0300 and 1400 G.M.T. (Monday to Friday).

Darwin W/T Station.

Approximate, Latitude 12° 27′ S. Longitude 130° 50′ E.
Call sign **VID,** wavelength 600 metres.
Time of transmission, 0500 G.M.T. (Sundays excepted).

Townsville W/T Station.

Approximate, Latitude 19° 16′ S. Longitude 146° 50′ E.
Call sign **VIT,** wavelength 600 metres (I.C.W.).
Time of transmission, 1100 G.M.T. (Sundays excepted from April 16th to December 16th).

Brisbane W/T Station.

Approximate, Latitude 27° 26′ S. Longitude 153° 07′ E.
Call sign **VIB,** wavelength 600 metres (I.C.W.).
Times of transmission, 0200 G.M.T.; and 1200 G.M.T. (Sundays excepted, April 16th to December 16th).

Sydney, W/T Station.

Approximate, Latitude, 33° 46′ S. Longitude 151° 03′ E.
Call sign **VIS**.
Times of transmission, 0050, 0420 G.M.T.; 0650 G.M.T. (Sundays excepted); and 1035 G.M.T. on a wavelength of 600 metres and at 0200 G.M.T. on a wavelength of 2,400 metres (C.W.).

Richmond W/T Station.

Approximate, Latitude 33° 36′ S. Longitude 150° 46′ E.
Call sign **VJT,** wavelength 2,308 metres (C.W.)
Times of transmissions, 0120 G.M.T. (except Sundays) giving a forecast for waters adjacent to the S.E. coast of the continent; 0320 G.M.T. giving forecast for Australian waters.

Melbourne W/T Station.

Approximate, Latitude 37° 47′ S. Longitude 144° 52′ E.
Call sign **VIM,** wavelength 600 metres (I.C.W.).
Times of transmission, 0200 and 1100 G.M.T.

Point Cook W/T Station.

Approximate, Latitude 37° 55′ S. Longtitude 144° 45′ E.
Call sign **VJS,** wavelength 2,308 metres (C.W.).
Times of transmissions, 0050 and 0720 G.M.T. (except Sundays) giving forecast for the waters adjacent to the South-east coast of the continent; 0250 and 0720 G.M.T. giving forecast for Australian waters

Adelaide W/T Station.

Approximate, Latitude 34° 51′ S. Longitude 138° 32′ E.
Call sign **VIA,** wavelength 600 metres (I.C.W.).
Times of transmission, 1130 and 1330 G.M.T.

Esperance W/T Station.

Approximate, Latitude 33° 52′ S. Longitude 121° 54′ E.
Call sign **VIE.** wavelength 680 metres.
Times of transmission, 0300 and 1300 G.M.T., Mondays to Fridays inclusive; Saturdays at 0300 only.

Wireless Storm Warnings.

Storm Warnings are broadcast *en clair*, immediately on receipt by any of the above Australian W/T Stations which are in the area affected. Wavelength 600 m.

III.—Wireless Time Signals.

Station.	Call Sign.	Wave-length (metres).	G.M.T.	System.
Perth Lat. 32° 01′ 51″ S. Long. 115° 49′ 31″ E.	VIP	600 (I.C.W.).	0057–0100 1257–1300	(*See* Time Signal Figure, p. 117.) Controlled by Perth Observatory.
Adelaide Lat. 34° 51′ 14″ S. Long. 138° 31′ 55″ E.	VIA	600 (I.C.W.).	0027–0030 1227–1230	(*See* Figure as above.) Transmitted automatically by the standard clock of the Adelaide Observatory.

Melbourne W/T Station, Latitude 37° 46′ 56″ S., Longitude 144° 52′ 09″ E., call sign, **VIM,** wavelength 600 metres (I.C.W.).

Wireless time signals are broadcast from Melbourne W/T Station in accordance with the New International System of W/T time signals at the following times :—

G.M.T.						
h.	m.	s.		h.	m.	s.
1	57	00	to	2	00	00
13	57	00	,,	14	00	00

The transmission of each series of signals is similar, the procedure being as follows :—

G.M.T.							Signal.	
h.	m.	s.		h.	m.	s.		
1 13	57	00	to	1 13	57	50	— • • — — • • — — • • — etc.	
	57	55	,,		58	00	55 56 57 58 59 60 • • • • • •	*Time signal.*
	58	08	,,		58	10	— •	
	58	18	,,		58	20	— •	
	58	28	,,		58	30	— •	
	58	38	,,		58	40	— •	
	58	48	,,		58	50	— •	
	58	55	,,		59	00	55 56 57 58 59 60 • • • • • •	*Time signal.*
	59	06	,,		59	10	— — •	
	59	16	,,		59	20	— — •	
	59	26	,,		59	30	— — •	
	59	36	,,		59	40	— — •	
	59	46	,,		59	50	— — •	
1 13	59	55	,,		00	00	55 56 57 58 59 60 • • • • • •	*Time signal.*

NEW ZEALAND.

II.—Wireless Weather Bulletin.

Wellington W/T Station, Latitude 41° 16′ S. Longitude 174° 46′ E. Call sign **ZLW.**

Wavelength 800m. I.C.W. (375 kc/s.). Time of transmission 0930 G.M.T.

General statement of weather conditions for New Zealand waters.

Forecast for New Zealand, New Zealand Waters and the eastern Tasman Sea.

Weather Report in code giving actual observations at the stations below.

The International Ships Wireless Weather Telegraphy Code is used. To decode these reports the tables given in M.O. 329 are required (Decode for use with International Code for Wireless Weather messages from ships [Fifth Edition], obtainable from His Majesty's Stationery Office, price 6d.).

The Key letters are fully described on page 37 of the January, 1938, number and in M.O. 329, with the exception of symbol III meaning the distinguishing figures of the coast stations.

Key letters IIIAS, DDFww, PPVTT.

Distinguishing Figures.	*Station.*	*Position approx.* *Latitude.*	*Longitude.*
495	Norfolk Island	29° 04′ S.	167° 58′ E.
505	C. Maria Van Diemen	34° 29′ S.	172° 39′ E.
510	Auckland	36° 51′ S.	174° 47′ E.
515	East Cape	37° 41′ S.	178° 33′ E.
520	Cape Egmont	39° 17′ S.	173° 45′ E.
524	Napier	39° 29′ S.	176° 56′ E.
525	Wanganui	39° 52′ S.	175° 05′ E.
532	Farewell Spit	40° 33′ S.	173° 01′ E.
534	Stephens I.	40° 41′ S.	174° 01′ E.
537	Wellington	41° 16′ S.	174° 46′ E.
540	Cape Campbell	41° 43′ S.	174° 17′ E.
542	Westport	41° 27′ S.	171° 37′ E.
545	Greymouth	42° 27′ S.	171° 12′ E.
550	Akaroa Lt. Ho.	43° 48′ S.	172° 59′ E.
558	Nugget Pt.	46° 26′ S.	169° 50′ E.
565	Puysegur Pt.	46° 10′ S.	166° 38′ E.
570	Chatham Is.	43° 52′ S.	176° 42′ E
326	Sydney	33° 51′ S.	151° 13′ E.
394	Hobart	42° 53′ S.	147° 20′ E.
560	Bluff*	46° 37′ S.	168° 21′ E.
506	Russell*	35° 15′ S.	174° 07′ E.

* Stations may be added.

III.—Wireless Time Signals.

Wellington W/T Station Latitude 41° 16′ 26″ S., Longitude 174° 45′ 55″ E., call sign **ZLW**, broadcasts time signals daily, on 600 metres (I.C.W.) as follows :—

The transmission is a relay of the time signal from Dominion Observatory, call sign ZMO, which is automatically operated by the Standard Time Clock at the Observatory (Latitude 41° 17′ 03·8″ S., Longitude 174° 46′ 00·0″ E.).

The first time signal is at 23 h. 00 m. 00 s., G.M.T., and is repeated at the 1st, 2nd, 4th and 5th minutes.

There is no time signal at 23 h. 03 m. 00 s.

Each time signal commences exactly at the beginning of the minute and lasts for *three seconds*, approximately :—

G.M.T.							Signal.
h.	m.	s.		h.	m.	s.	
22	58	00	to	22	58	55	— ZMO (every 15 seconds, the dash being of two seconds duration.)
22	59	10	,,	22	59	50	— — • — — • — — • etc.
23	00	00	,,	23	00	03	——— Time signal.
23	00	12	,,	23	00	50	— — — — — — — etc.
23	01	00	,,	23	01	03	——— Time signal.
23	01	13	,,	23	01	50	— — — — — — etc.

G.M.T.							
h.	m.	s.		h.	m.	s.	
23	02	00	to	23	02	03	——— Time signal.
23	02	14	,,	23	03	50	— — — — — — — — etc.
23	04	00	,,	23	04	03	——— Time signal.
23	04	09	,,	23	04	50	— — — — — — — — — — etc.
23	05	00	,,	23	05	03	——— Time signal.

AR ZMO VA.

In addition to the above, the undermentioned time signals are broadcast on Tuesdays and Fridays, except on New Zealand Government holidays, by the Dominion Observatory, Wellington.

The conditions governing the transmission are similar to those given above.

The first time signal is at 9 h. 00 m. 00 s. (G.M.T.), and is repeated at the 1st, 2nd, 4th and 5th minutes.

There is no time signal at 9 h. 03 m. 00 s. Each signal commences exactly at the beginning of the minute, and lasts for *three seconds*, approximately.

G.M.T.							Signal.
h.	m.	s.		h.	m.	s.	
8	58	00	to	8	58	55	— ZMO (every 15 seconds, the dash being of two seconds duration.)
8	59	10	,,	8	59	50	— — • — — • — — • — — • etc.
9	00	00	,,	9	00	03	——— Time signal.
9	00	12	,,	9	00	50	— — — — — — — — — — etc.
9	01	00	,,	9	01	03	——— Time signal.
9	01	13	,,	9	01	50	— — — — — — — — etc.
9	02	00	,,	9	02	03	——— Time signal.
9	02	14	,,	9	03	50	— — — — — — — — etc.
9	04	00	,,	9	04	03	——— Time signal.
9	04	09	,,	9	04	50	— — — — — — — — — — etc.
9	05	00	,,	9	05	03	——— Time signal.

AR ZMO VA

NOTE.—All hand Key signals, except in the 58th minute, terminate on the 50th second, to enable the observer to take the signals accurately. The hand signals must *not* be used as time signals.

NEW BRITAIN.

II.—Wireless Weather Bulletins.

Rabaul (Bitapaka) W/T Station, approximate, Latitude 4° 24′ S., Longitude 152° 19′ E.

Call sign **VJZ.** Wavelength 2,400 metres (I.C.W.).

At 0600 G.M.T., daily, broadcasts a weather report and an ocean forecast. Ships may also obtain this information on application to the W/T Station. From 16th April to 16th December, no forecast is broadcast on Sundays.

Wireless Storm Warnings.

Rabaul, call sign **VJZ,** wavelength, 2,400 metres (C.W.) broadcasts special warnings of disturbances on the Queensland coast immediately on receipt.

SOUTH PACIFIC OCEAN ISLANDS.

II.—Wireless Weather Bulletins.

Western Area.

Suva (Fiji) W/T Station, Latitude 18° 09′ S. Longitude 178° 28′ E. Call sign **VRP.**

Wavelength 800 m. I.C.W.

Times of transmission ; 0005 G.M.T.
0830 G.M.T.

The 0005 G.M.T. transmission contains observations taken at 2000 G.M.T. and the 0830 G.M.T. transmission contains observations taken at 0200 G.M.T.

Weather report in code giving actual observations at the stations numbered 425, 426, 435, 443, 446, 447, 450, 451, 452, 453, 454, 455, 457, 458, 459, 460, 461 and 462 on the Chart overleaf.

The International Ships Wireless Telegraphy Code is used.

To decode these reports the tables given in M.O. 329 are required (Decode for use with International Code for Wireless Weather messages for ships [Fifth Edition], obtainable from His Majesty's Stationery Office, price 6d.)

The Key letters are fully described on page 37 of the January, 1938, number and in M.O. 329, with the exception of the symbol III which means the distinguishing figures of the coast stations.

Key letters IIICW DDFww PPVTT.

Barometer tendency is added "*en clair*" when necessary.

Central and Eastern Areas.

Apia (Samoa) W/T Station, Latitude 13° 50′ S. Longitude 171° 50′ W. Call sign **ZMA.**

Times of transmission: 0100 G.M.T. (November 1st to April 30th); wavelengths, 800m. and 26m. I.C.W.
0920 G.M.T.; wavelengths, 800m. and 52m. I.C.W.

The 0100 G.M.T. transmission contains observations taken at 2000 G.M.T. and the 0920 G.M.T. transmission contains observations taken at 0200 G.M.T.

Weather report in code giving actual observations at the stations numbered 439, 467, 473, 477 and 478 on the Chart below.

The Key and Code is the same as for Suva above.

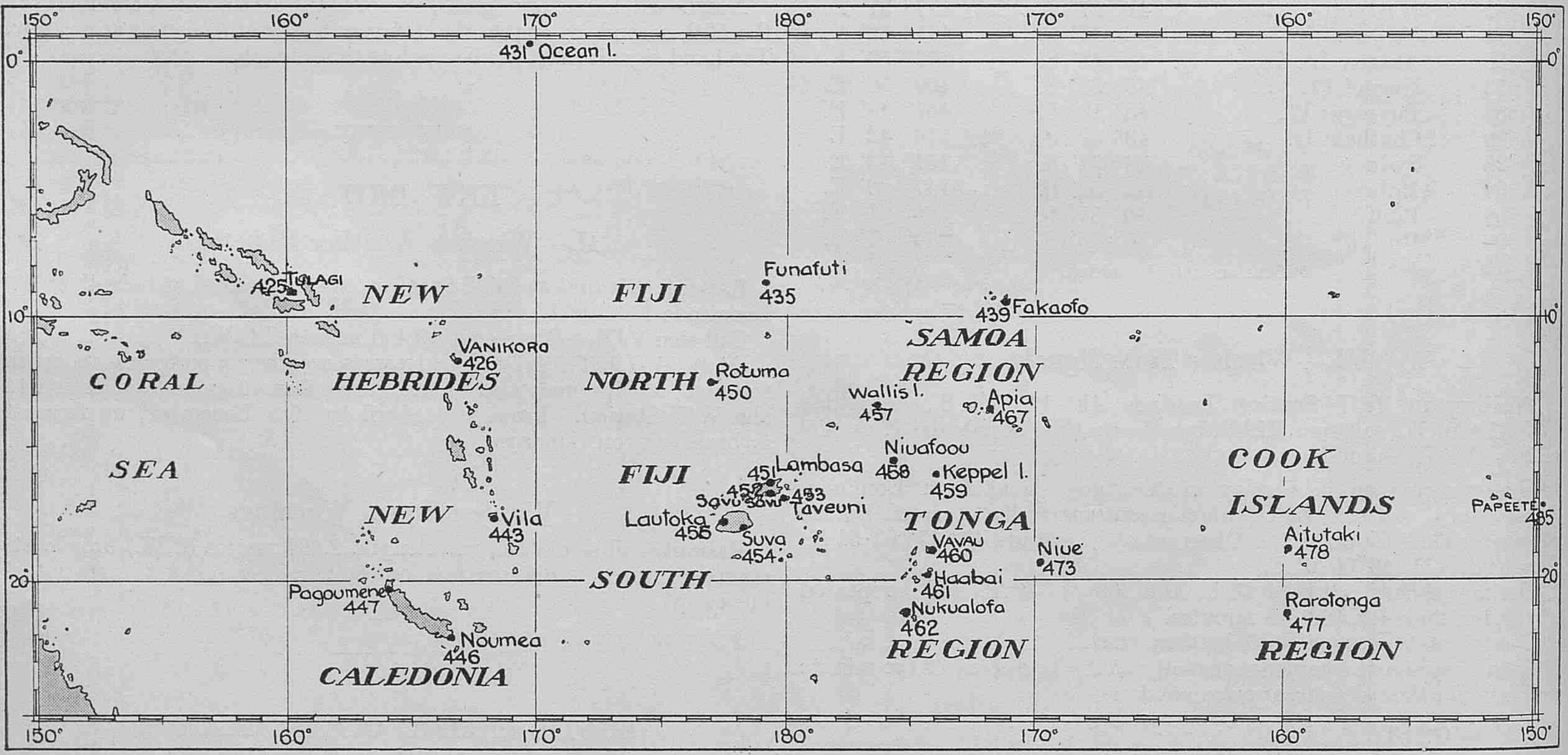
A General statement of weather conditions in plain language is added when necessary and the various regions of the South Pacific will be referred to by the names shown on the chart below.

Wireless Storm Warnings.

Suva W/T Station call sign **VRP** and **Apia W/T Station** call sign **ZMA** broadcast storm warnings when necessary on 800 m. I.C.W. immediately after the Weather reports explained above.

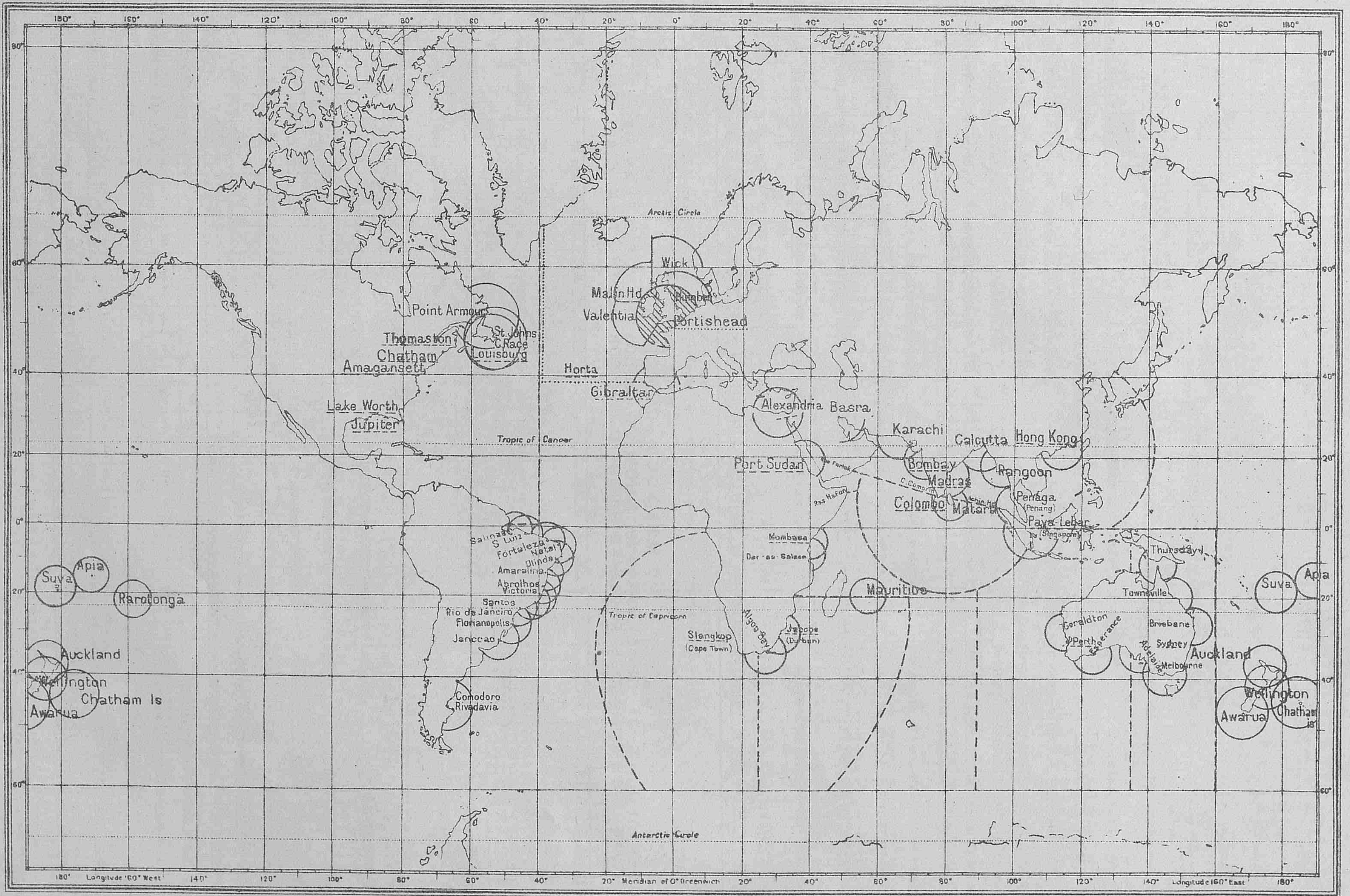
French Oceania.

Papeete (Tahiti), approximate Latitude 17° 29′ S., Longitude 149° 29′ W., call sign **FPB,** broadcasts information concerning hurricanes, &c., at any hour when necessary on a wavelength of 600 metres. The safety signal **TTT,** repeated at short intervals ten times on full power, is first sent out followed by the message which is repeated three times with intervals of ten minutes.


150°
160°
170°
180°
170°
160°
150°
0°
10°
20°
431 Ocean I.
425 TULAGI
NEW
HEBRIDES
VANIKORO
426
CORAL
SEA
NEW
CALEDONIA
Vila
443
Pagoumene
447
Noumea
446
FIJI
NORTH
FIJI
SOUTH
Funafuti
435
Rotuma
450
451 Lambasa
452
Savu Savu
453
Taveuni
Lautoka
455
Suva
454
439 Fakaofo
SAMOA
REGION
Wallis I.
457
Apia
467
Niuafoou
458
Keppel I.
459
TONGA
REGION
VAVAU
460
Haabai
461
Nukualofa
462
Niue
473
COOK
ISLANDS
REGION
Aitutaki
478
Rarotonga
477
PAPEETE
485

SHIPS' WIRELESS WEATHER SIGNALS.
CHART OF THE WORLD.

Stations for Reception of Routine Wireless Weather Reports from "Selected Ships"


Arctic Circle
Tropic of Cancer
Tropic of Capricorn
Antarctic Circle
Longitude 160° West
Meridian of 0° Greenwich
Longitude 160° East
Wick
Malin Hd
Humber
Valentia
Portishead
Gibraltar
Horta
Point Armour
St. Johns
C. Race
Louisburg
Thomaston
Chatham
Amagansett
Lake Worth
Jupiter
Alexandria
Basra
Port Sudan
Ras Fartak
Ras Hafun
Karachi
Bombay
C. Comorin
Madras
Colombo
Matara
Calcutta
Hong Kong
Rangoon
Penaga (Penang)
Paya Lebar (Singapore)
Mombasa
Dar-es-Salaam
Mauritius
Slangkop (Cape Town)
Algoa Bay
Jacobs (Durban)
Salinas
S. Luiz
Fortaleza
Natal
Olinda
Amaralina
Abrolhos
Victoria
Santos
Rio de Janeiro
Florianopolis
Janeirao
Comodoro Rivadavia
Suva
Apia
Rarotonga
Auckland
Wellington
Awarua
Chatham Is
Thursday I.
Townsville
Geraldton
Perth
Esperance
Brisbane
Sydney
Adelaide
Melbourne
Chatham Is

······ The dotted line indicates the area in which British "A Selected Ships" report under control to Portishead.

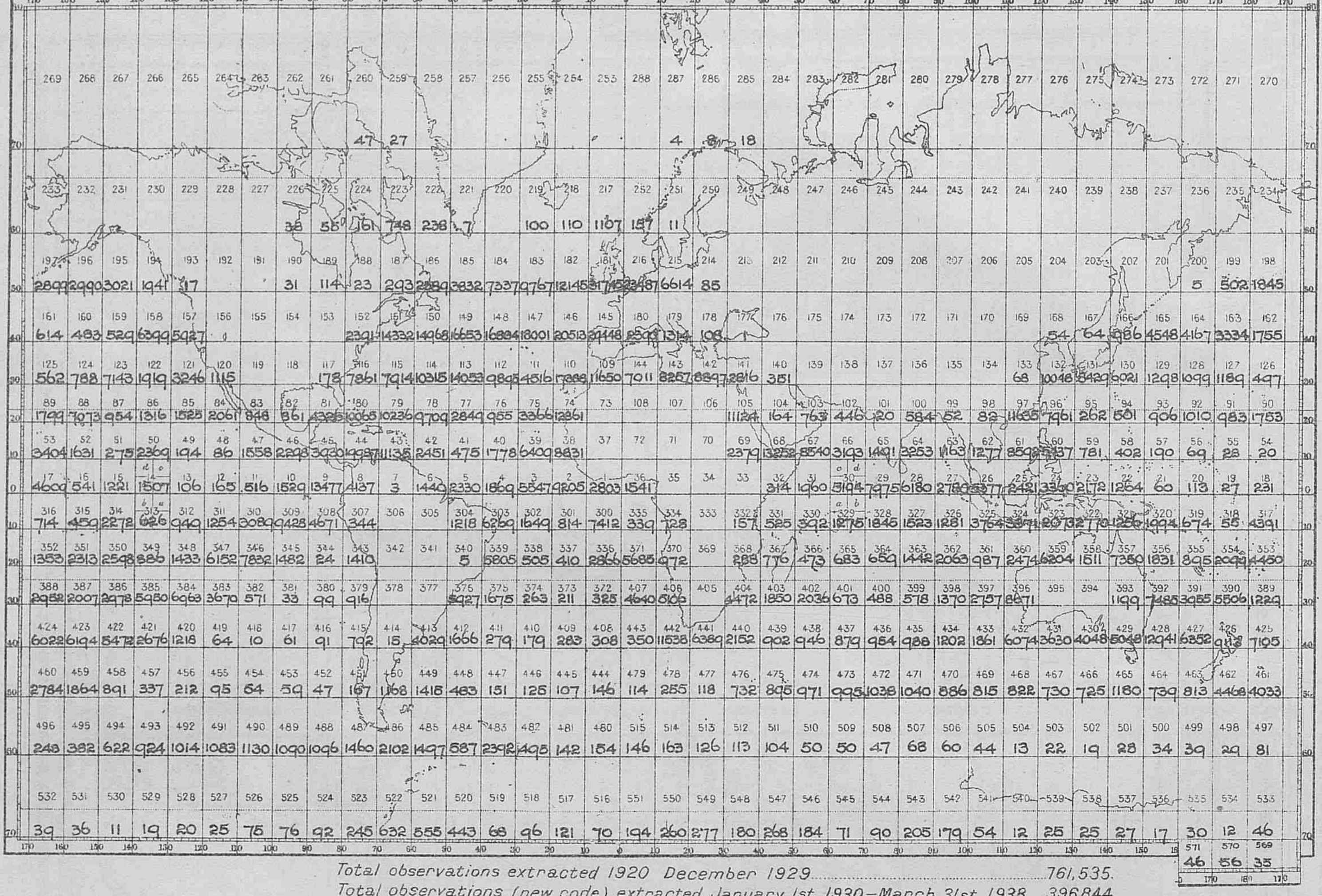
– – – – A pecked line indicates the reporting area round stations in other countries to which British "A Selected Ships" should report. The names of such stations being underlined with a pecked line.

▨ The small shaded areas round stations detailed to receive reports from "A Selected Ships" indicate where these ships should not report on account of congestion.

○ The full circles indicate the areas round islands and coast stations which are detailed to intercept "B Selected Ships" reports made to C.Q. on 600 metres.

MARSDEN CHART I.

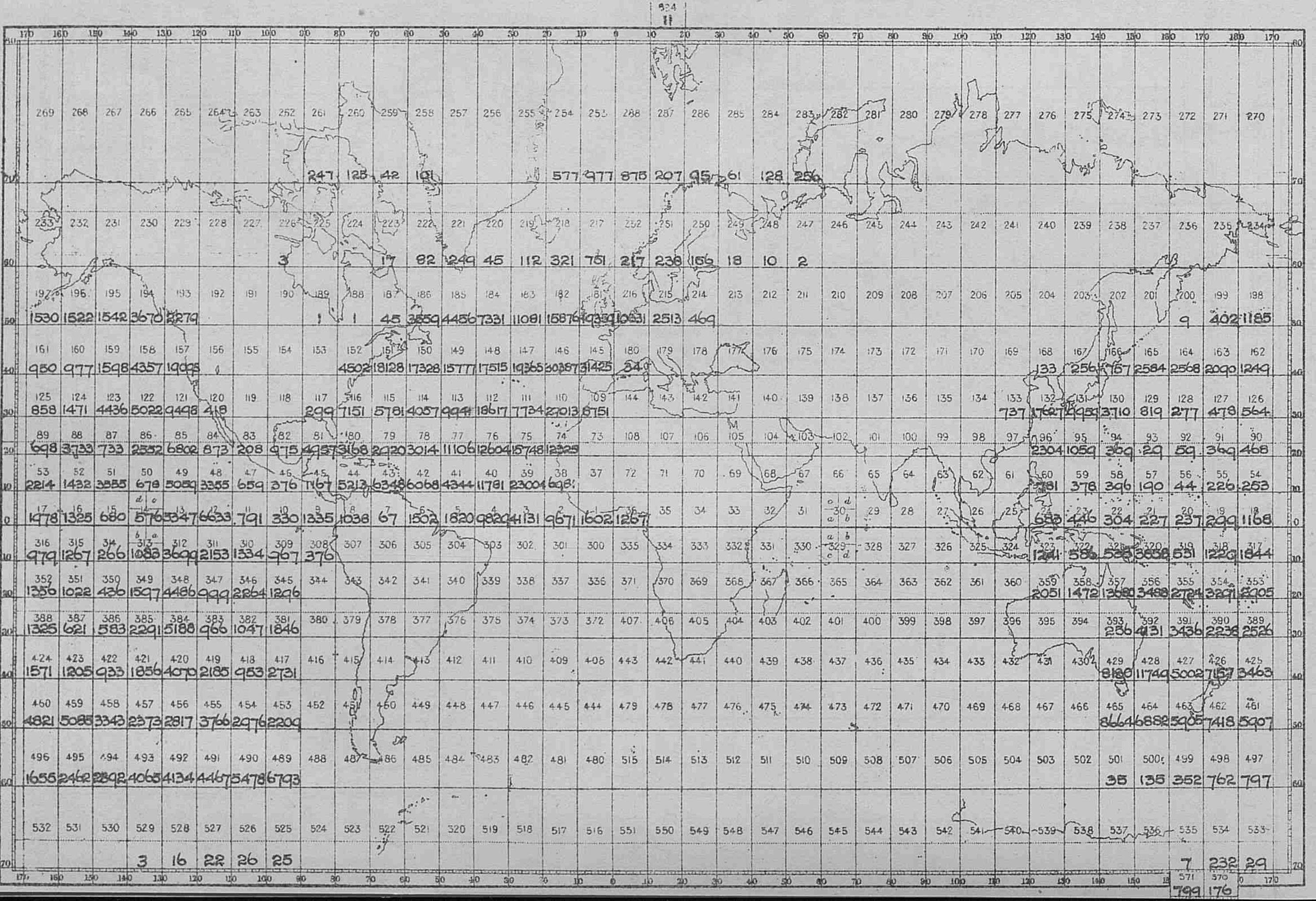
SHOWING NUMBER OF SETS OF OBSERVATIONS EXTRACTED BETWEEN APRIL 1st. 1920 & MARCH 31st. 1938.



Total observations extracted 1920 December 1929	*761,535.*
Total observations (new code) extracted January 1st. 1930–March 31st. 1938	*396,844.*
Grand Total since April 1st. 1920	*1,158,379.*

MARSDEN CHART II.

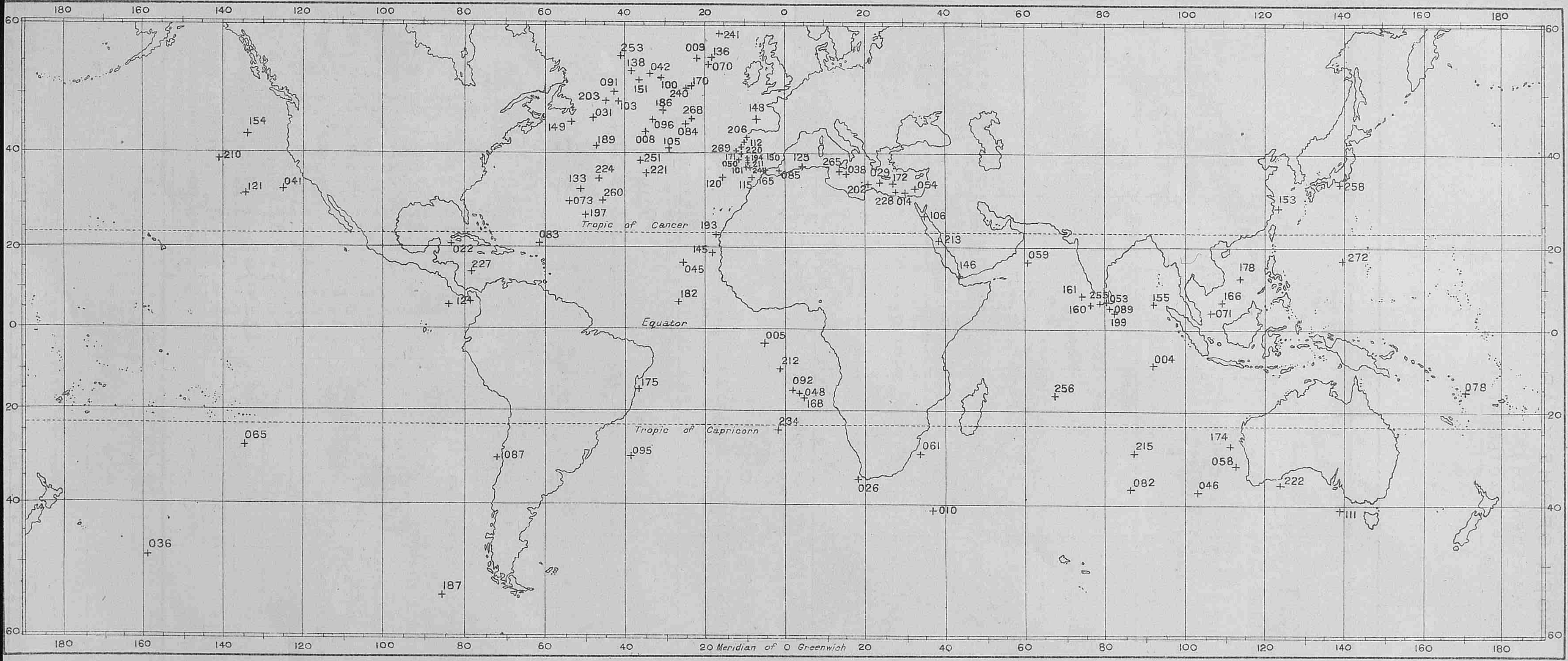
NUMBER OF SETS OF OBSERVATIONS SHOWING RECOVERY OF AREAS OF EXTRACTION OF OBSERVATIONS FROM LOGS RECEIVED PRIOR TO 1920 FOR NORTH ATLANTIC AND PACIFIC OCEANS.



WORK OF THE YEAR.

CHART III.

CHART OF THE WORLD SHOWING POSITION OF BRITISH SELECTED SHIPS AT SEA ON JUNE 1ST., 1937.


180
160
140
120
100
80
60
40
20
0
20
40
60
80
100
120
140
160
180
60
40
20
0
20
40
60
Tropic of Cancer
Equator
Tropic of Capricorn
20 Meridian of 0 Greenwich
241
253
138
042
009
136
070
091
151
100
240
170
203
103
186
268
031
149
096
084
148
154
189
008
105
206
112
269
220
171
194
150
050
211
101
244
125
265
038
029
172
054
210
251
221
120
115
165
085
202
228
014
121
041
133
224
260
073
197
153
258
106
193
083
022
213
145
227
045
059
146
272
178
182
161
255
053
160
089
155
166
071
124
199
005
004
212
092
048
168
256
175
078
234
065
174
215
087
095
061
058
026
082
046
222
010
111
036
187

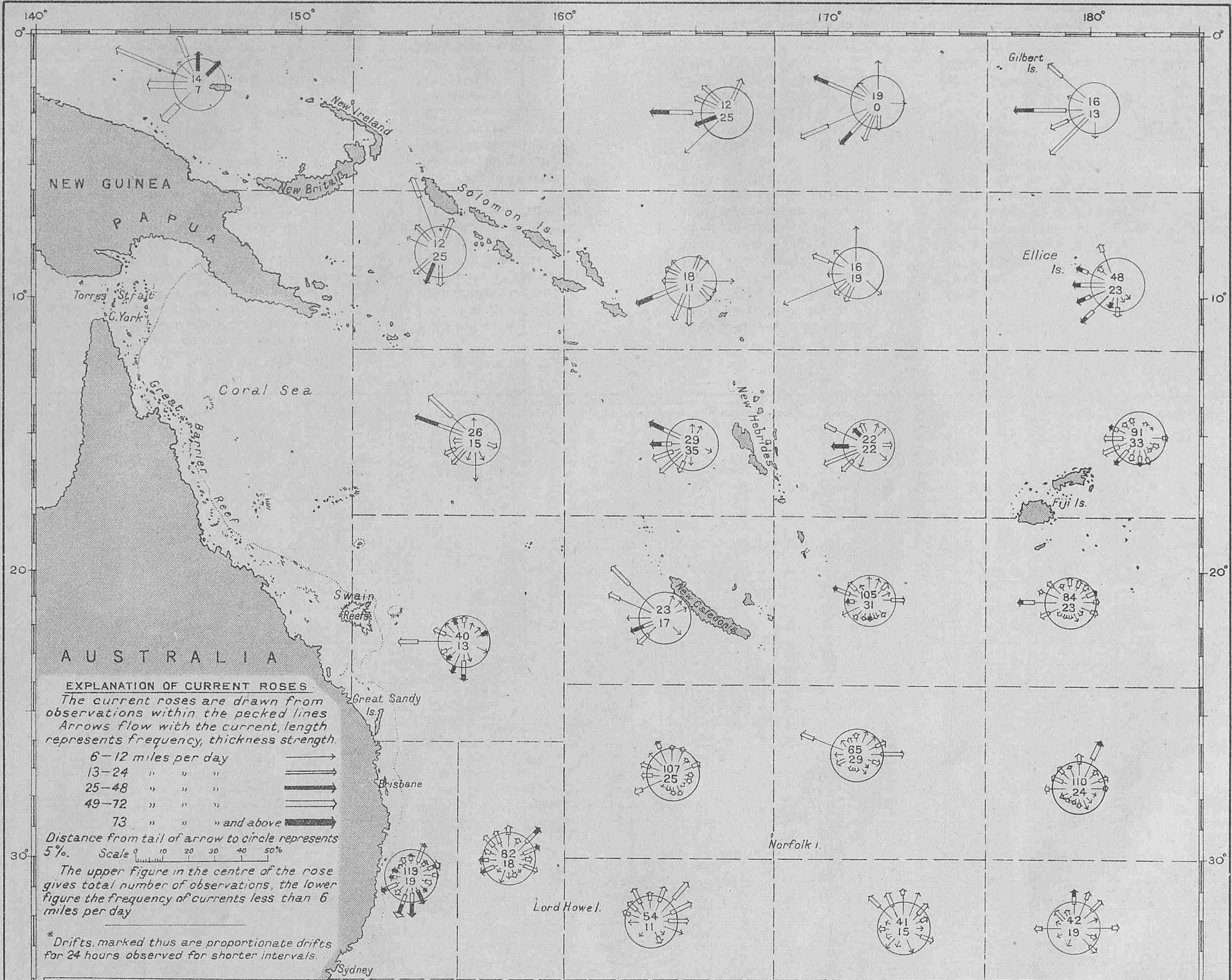
004A	Waipawa, M.S.
005A	Warwick Castle, M.S.
008B	Losada, M.S.
009B	Manchester Brigade
010B	Port Fremantle, M.S.
014B	Mahronda
022B	Alynbank, M.S.
026B	Glenbank, M.S.
029B	Cheshire, M.S.
031A	Caledonia
036B	Cumberland
038B	British Corporal
041B	Clydebank, M.S.
042A	Cameronia
045A	Avila Star
046B	Australia Star, M.S.
048A	Themistocles
050B	Clan Macalister
053B	Worcestershire, M.S.
054B	British General
058B	Dorset, M.S.
059A	Strathnaver
061B	Devon
065A	Akaroa
070A	Montcalm
071A	Rawalpindi
073B	San Arcadio, M.S.
078B	Myrtlebank, M.S.
082B	Clan Macnair
083B	Lautaro, M.S.
084A	Clydefield
085A	Orontes
087A	Orduna
089B	City of Hereford
091A	Athenia
092A	Carnarvon Castle, M.S.
095B	Port Dunedin, M.S.
096B	Kelso
100A	Samaria
101B	Clan Macfarlane
103B	Ausonia
105A	Rangitiki, M.S.
106B	British Colonel
111B	Port Townsville, M.S.
112B	La Rosarina
115A	Arandora Star
120A	Apapa, M.S.
121B	Siamese Prince, M.S.
124B	Fordsdale
125B	City of Windsor
133A	Avelona Star
136B	Newfoundland
138B	Beaverdale
145B	Berwickshire
146B	Mandasor
148A	Orford
149A	Montclare
150A	Montrose
151A	Duchess of Richmond
153A	Empress of Japan
154A	Empress of Canada
155A	Carthage
160B	Amarapoora
161B	Titan
165B	Radnorshire, M.S.
166B	Agamemnon, M.S.
168B	Clan Mactaggart
170A	Scythia
171B	Hertford
172A	Orama
174A	Ormonde
175A	Almanzora
178B	Alipore
182A	Highland Brigade, M.S.
186A	Georgic, M.S.
187B	Coptic, M.S.
189A	Britannic
193A	Dunnottar Castle, M.S.
194A	Moldavia
197B	Ingoma
199A	Mongolia
202A	Narkunda
203A	Empress of Australia
206B	Karamea, M.S.
210B	Niagara
211B	Shropshire, M.S.
212A	Waiwera, M.S.
213A	Mashobra
215B	City of Canberra
220A	City of Exeter
221A	Tynefield, M.S.
222B	Clan Macdougall, M.S.
224A	Rangitane, M.S.
227B	Nardana
228A	Ranchi
234B	Glaucus
240B	Aurania
241B	Cairnglen
244B	Yoma
251B	Levernbank, M.S.
253B	Cairnross
255B	Clan Macneil
256B	City of Lyons
258A	Corfu
260B	Inanda
265B	City of Baroda
268B	Port Bowen
269A	Voltaire
272B	City of Singapore

109 ships out of 281, in favourable positions to report, with 172 in port or narrow waters. This is typical and represents a fair average. 39 per cent. in position to report.

CURRENTS IN THE WESTERN PORTION OF THE SOUTH PACIFIC. North of Latitude 34°S.

MAY, JUNE, and JULY.

Observations of ships regularly observing for the British Meteorological Office, 1910-1937.


140°
150°
160°
170°
180°
0°
10°
20°
30°
NEW GUINEA
PAPUA
New Ireland
New Britain
Solomon Is.
Torres Strait
C. York
Coral Sea
Great Barrier Reef
Swain Reefs
AUSTRALIA
Great Sandy Is.
Brisbane
Sydney
Lord Howe I.
Norfolk I.
New Hebrides
New Caledonia
Fiji Is.
Ellice Is.
Gilbert Is.
Auckland
14 7
12 25
19 0
16 13
12 25
18 11
16 19
48 23
26 15
29 35
22 22
91 33
40 13
23 17
105 31
84 23
107 25
65 29
110 24
119 19
82 18
54 11
41 15
42 19

EXPLANATION OF CURRENT ROSES

The current roses are drawn from observations within the pecked lines. Arrows flow with the current, length represents frequency, thickness strength.

6–12 miles per day
13–24 " " "
25–48 " " "
49–72 " " "
73 " " " and above

Distance from tail of arrow to circle represents 5%. Scale 0 10 20 30 40 50%

The upper figure in the centre of the rose gives total number of observations, the lower figure the frequency of currents less than 6 miles per day

*Drifts marked thus are proportionate drifts for 24 hours observed for shorter intervals.

GREATEST DRIFTS REPORTED.

Name of Ship.	Date. Day.	Date. Year.	Middle. Lat.	Middle. Long.	Currents Set.	Currents Drift.	Wind. Dirn.	Wind. Force.
East Australian Coast Current North of 34°S.								
			MAY					
Makambo	26	1923	32°53′s.	154°21′E.	74°	72	—	—
			JUNE					
Narkunda	20	1935	28°49′s.	153°55′E.	207°	50	—	—
			JULY					
Stephan C.S	6	1923	28°13′s.	154°22′E.	157°	48	SEbyS.	2

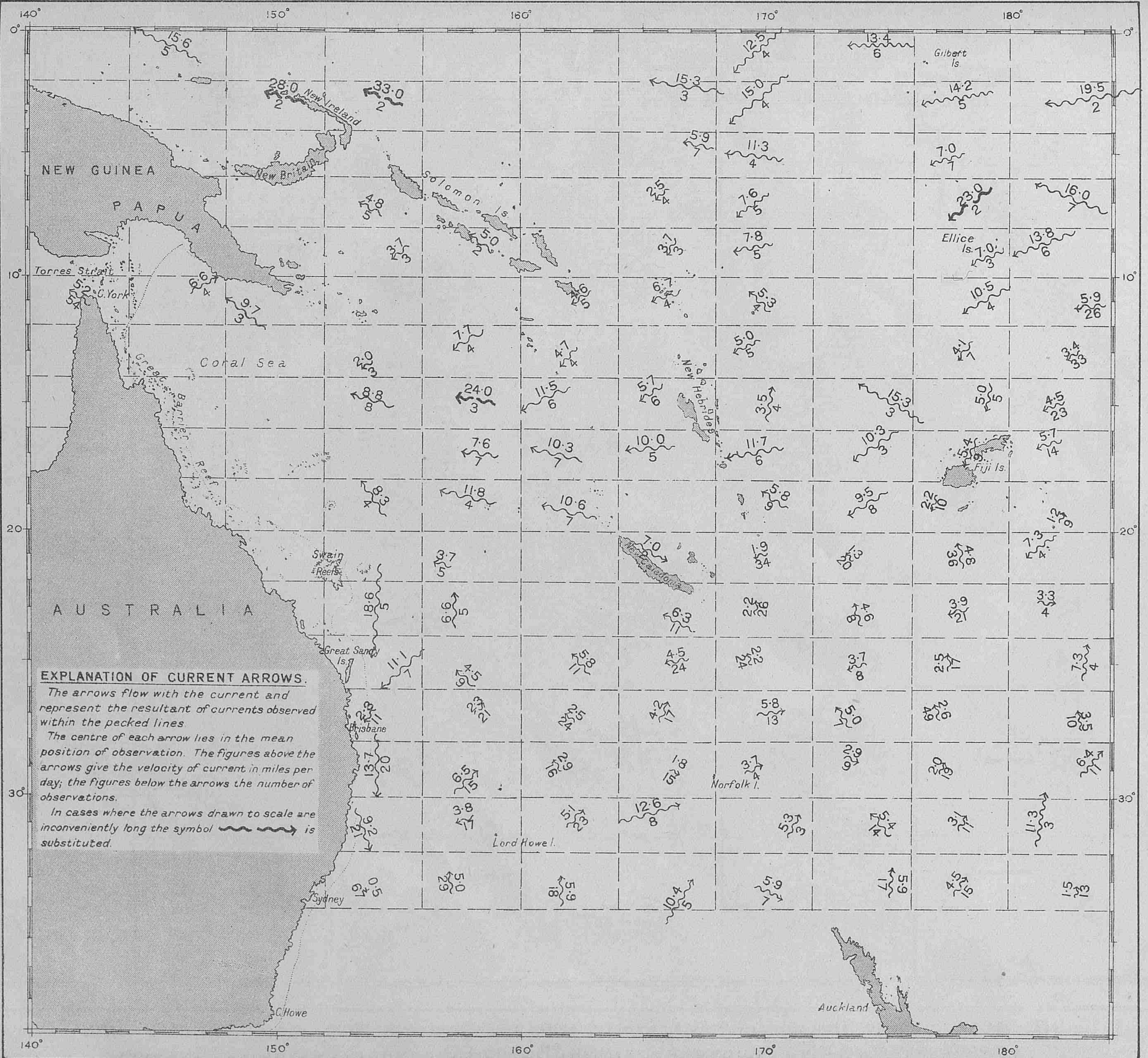
GREATEST DRIFTS REPORTED.

Name of Ship.	Date. Day.	Date. Year.	Middle. Lat.	Middle. Long.	Currents. Set.	Currents. Drift.	Wind. Dirn.	Wind. Force.
South Equatorial Current Lat 0°-8°S. Long. 176°W.-140°E.								
			MAY					
Nellore	11	1931	0°17′s.	144°25′E.	268°	67	ESE	3
			JUNE					
John Williams V Aux. Sch.	12	1936	3°15′s.	177°01′E.	272°	42	ENE	4
			JULY					
Deebank	8	1934	0°44′s.	144°08E.	50°	37	Var.	1

CURRENTS IN THE WESTERN PORTION OF THE SOUTH PACIFIC. North of Latitude 34°S

MAY, JUNE, and JULY.

Observations of ships regularly observing for the British Meteorological Office, 1910-1937.


140°
150°
160°
170°
180°
0°
10°
20°
30°
NEW GUINEA
PAPUA
New Ireland
New Britain
Solomon Is.
Torres Strait
C. York
Coral Sea
Great Barrier Reef
Swain Reefs
AUSTRALIA
Great Sandy Is.
Brisbane
Sydney
C. Howe
Lord Howe I.
New Hebrides
New Caledonia
Norfolk I.
Fiji Is.
Ellice Is.
Gilbert Is.
Auckland

EXPLANATION OF CURRENT ARROWS.

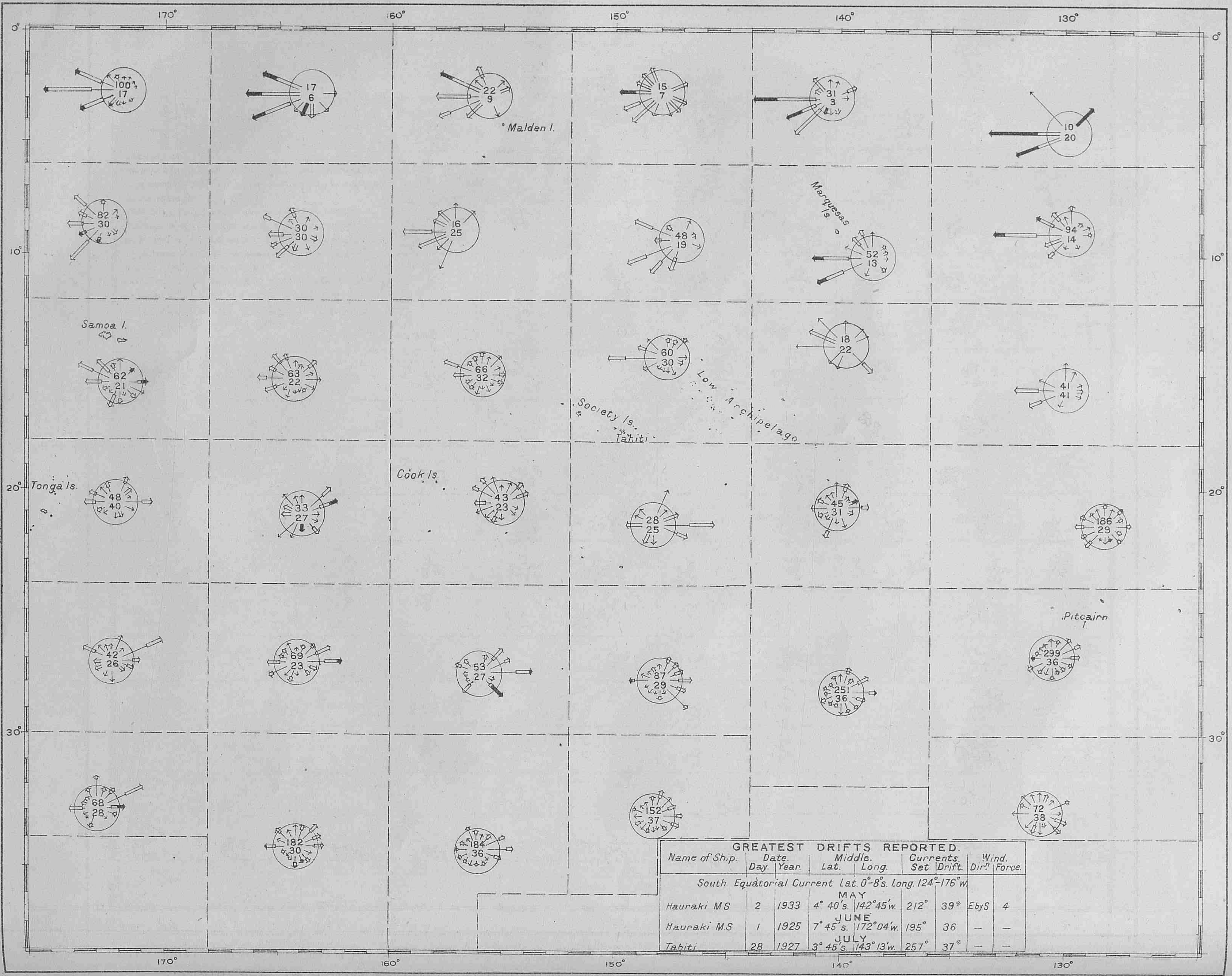
The arrows flow with the current and represent the resultant of currents observed within the pecked lines.

The centre of each arrow lies in the mean position of observation. The figures above the arrows give the velocity of current in miles per day; the figures below the arrows the number of observations.

In cases where the arrows drawn to scale are inconveniently long the symbol ⟿ is substituted.

CURRENTS IN THE CENTRAL PORTION OF THE SOUTH PACIFIC. North of Latitude 34°S.

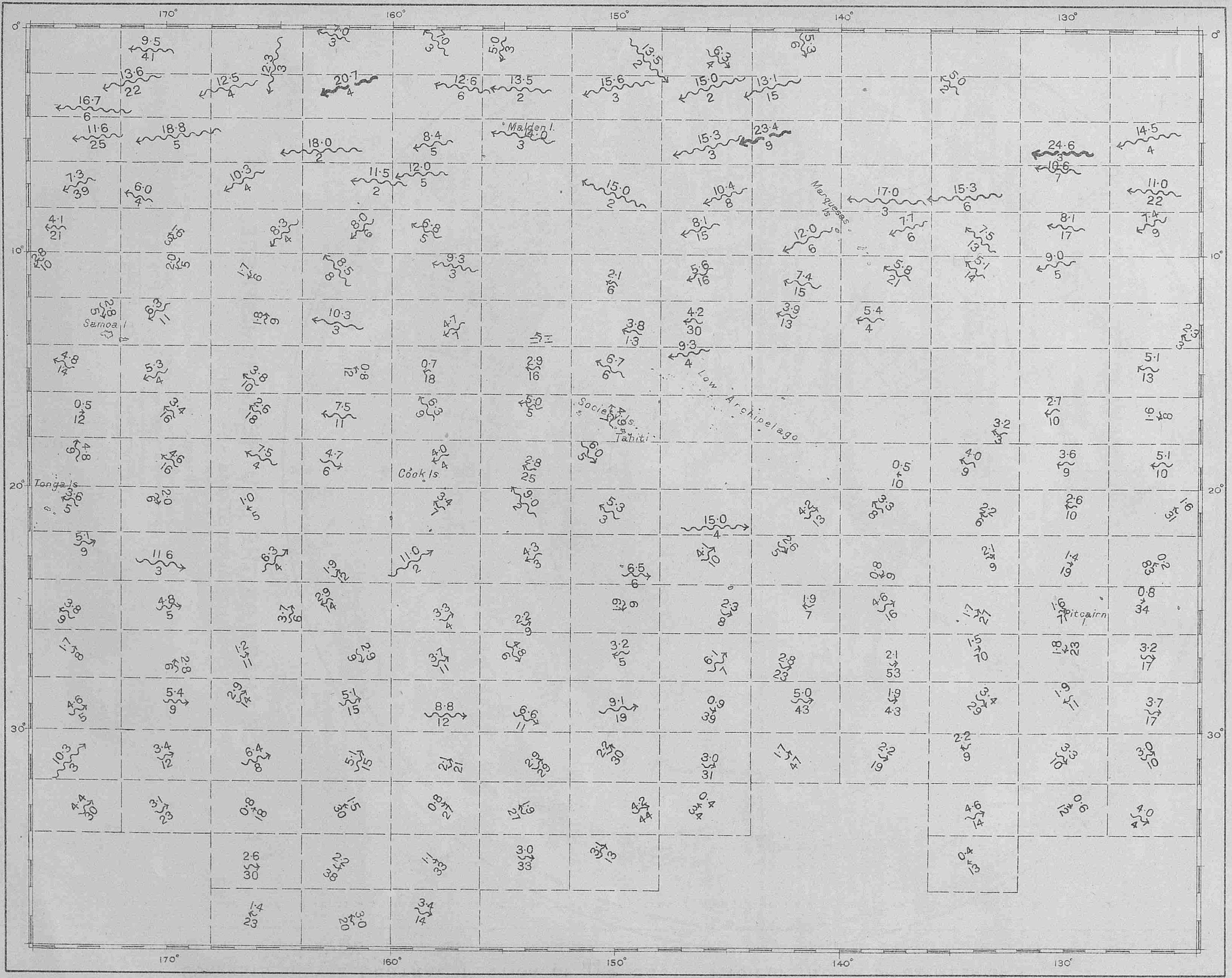
MAY, JUNE, and JULY. *Observations of ships regularly observing for the British Meteorological Office, 1910-1937.*

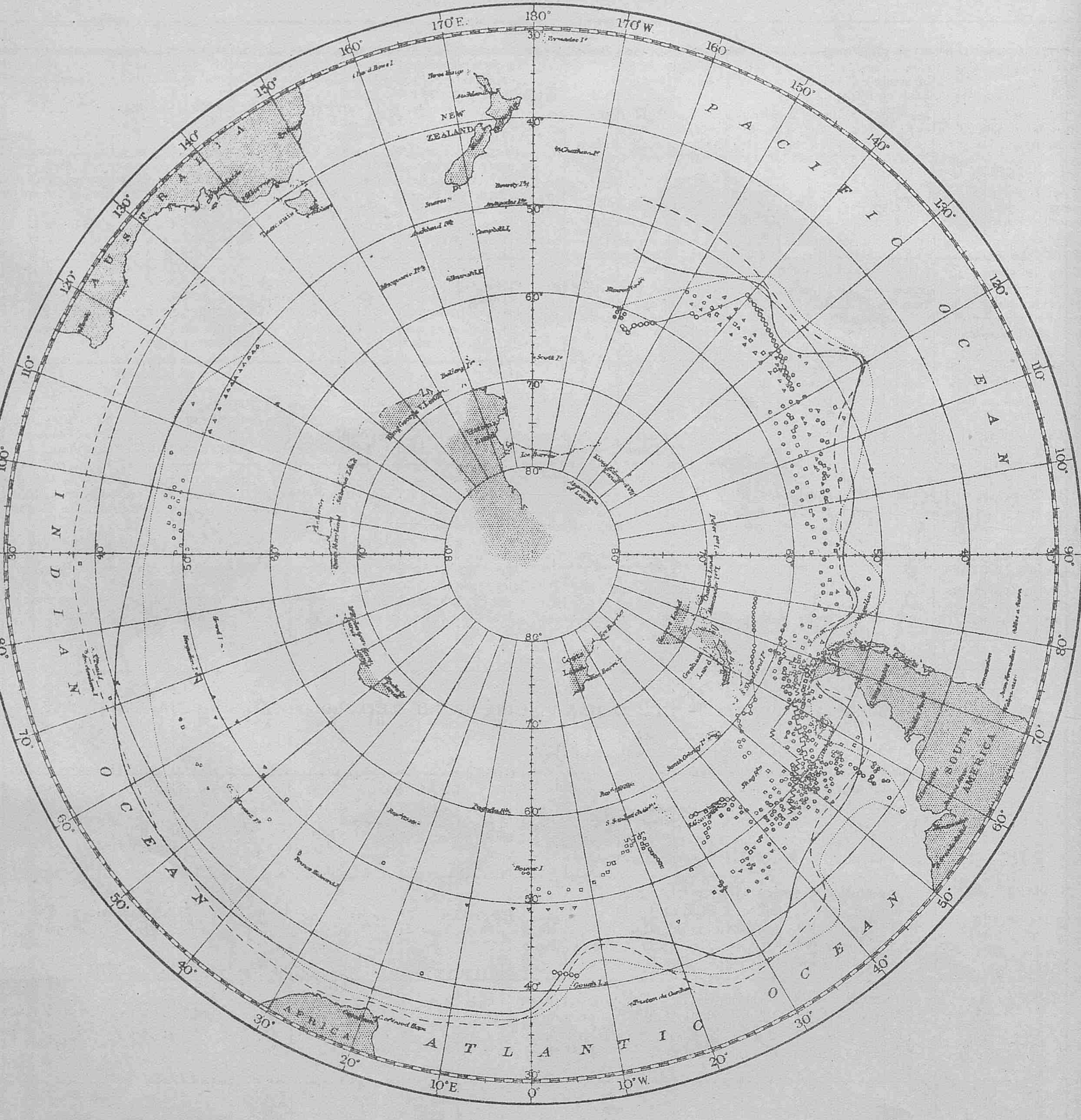

170°
160°
150°
140°
130°
0°
10°
20°
30°
Malden I.
Marquesas Is
Samoa I.
Society Is.
Tahiti
Low Archipelago
Cook Is.
Tonga Is.
Pitcairn I.
100 17
17 6
22 9
15 7
31 3
10 20
82 30
30 30
16 25
48 19
52 13
94 14
62 21
63 22
66 32
60 30
18 22
41 41
48 40
33 27
43 23
28 25
45 31
186 29
42 26
69 23
53 27
87 29
251 36
299 36
68 28
182 30
184 36
152 37
72 38

GREATEST DRIFTS REPORTED.								
Name of Ship.	Date.		Middle.		Currents.		Wind.	
	Day.	Year.	Lat.	Long.	Set	Drift.	Dirn.	Force.
South Equatorial Current Lat. 0°-8°s. Long. 124°-176°w.								
MAY								
Hauraki M.S	2	1933	4° 40′s.	142° 45′w.	212°	39*	EbyS	4
JUNE								
Hauraki M.S	1	1925	7° 45′s.	172° 04′w.	195°	36	—	—
JULY								
Tahiti	28	1927	3° 45′s.	143° 13′w.	257°	37*	—	—

CURRENTS IN THE CENTRAL PORTION OF THE SOUTH PACIFIC. North of Latitude 34°S.

MAY, JUNE, and JULY. *Observations of ships regularly observing for the British Meteorological Office, 1910-1937.*


170°
160°
150°
140°
130°
0°
10°
20°
30°
Malden I.
Marquesas Is.
Samoa I.
Low Archipelago
Society Is.
Tahiti
Cook Is.
Tonga Is.
Pitcairn I.


180°
170°E.
170°W.
160°
150°
140°
130°
120°
110°
100°
90°
80°
70°
60°
50°
40°
30°
20°
10°E
10°W.
0°
PACIFIC OCEAN
INDIAN OCEAN
ATLANTIC OCEAN
AUSTRALIA
NEW ZEALAND
AFRICA
SOUTH AMERICA
Chatham I.
Bounty I.
Antipodes I.
Auckland I.
Campbell I.
Macquarie I.
Balleny I.
Scott I.
Ice Barrier
Peter I.
Graham Land
South Orkney I.
South Georgia
S. Sandwich Is.
Bouvet I.
Gough I.
Tristan da Cunha
Kerguelen I.
Heard I.
Crozet I.
Prince Edward I.
Coats Land
Falkland Is.

ICE CHART OF THE SOUTHERN HEMISPHERE,

JULY AUGUST and SEPTEMBER

EXPLANATION.

The symbols used to distinguish the ice of each of the three months are as follows:—

	Bergs, 1902-1937	Position of northernmost pack ice actually observed 1885-1937	Extreme limit of all ice, 1772-1937
July	△	∿∿∿∿∿∿∿∿∿∿∿∿	————————
August	□	⊓⊓⊓⊓⊓⊓⊓⊓⊓⊓	— — — — — —
September	○	—o—o—o—o—o—o—	··················

Note — The symbols for pack ice are joined by hair line where desirable.

The coast line of the Antarctic continent as shown on this chart is not completely corrected to accord with the latest survey information. It is intended in a later volume of The Marine Observer, after the Admiralty Ice chart of the Southern Hemisphere No. 1241 has been revised, to again publish this chart in The Marine Observer with coast lines as complete as possible and to bring the ice information up to date annually.

H.M Stationery Office Press, Kingsway, W.C.2.

Ps. 351/3484. Wt. 20A. D.20. Gp. 948. 1350. 6/38.

MARINE METEOROLOGY.

Co-operation of Shipowners, Masters and Mates.

Captains and Officers of ships registered in Great Britain and Northern Ireland, who wish to co-operate regularly with the Meteorological Office should apply to the appropriate Port Meteorological Officer or Agent, a list of whom, with addresses, is given below.

In accordance with the International Convention for Safety of Life at Sea, the Meteorological Office arranges for certain "Selected Ships" to take meteorological observations at specified hours, and to transmit such observations by wireless telegraphy, for the benefit of other ships and the various meteorological services.

Arrangements are also made for a limited number of ships to keep meteorological logs in certain trades for the purpose of completing the meteorological survey of the oceans.

Ships regularly performing these voluntary duties are known as Observing Ships; the whole as the Voluntary Observing Fleet; and the commanders and officers of these ships as the Corps of Voluntary Marine Observers.

At present the observing fleet is limited to a number not exceeding 350 observing ships. The number of British "Selected Ships" is determined upon the British proportion of world tonnage, on the assumption that there should be a total of 1,000 "Selected Ships" of all nations.

The observing fleet list indicating which are "Selected Ships," with the names of commanders, officers, and other particulars, is published in The Marine Observer and kept up to date monthly.

The Organization of Voluntary Meteorological Observation at sea is described in Chapter VII of The Marine Observer's Handbook, sixth edition.

The Quarterly Marine Observer or Monthly Supplement is sent regularly to the captain of every observing ship, for the information and guidance of his observing officers, and the wireless operators. The Captains of observing ships are also supplied on request with charts, and atlases, according to trade, if available, as meteorological equipment.

To ensure the accuracy of data collected for the purpose of research and for weather forecasting, ashore and afloat, and to provide a pattern which may be copied with advantage to all concerned for general use in merchant ships, sufficient tested instruments are lent by the Meteorological Office to the Captains of observing ships.

The commanders of observing ships keeping the meteorological log are requested to return it (accompanied by Form 138 in the case of "Selected Ships") through the appropriate Port Meteorological Officer or Agent at intervals of not more than five months.

Commanders of observing ships keeping Forms 911 are requested to return them (accompanied by Form 138 in the case of "Selected Ships") by post direct to the Meteorological Office, London, at the end each of voyage, or at intervals of not more than two months.

These forms have the address and "On His Majesty's Service" printed upon them, and should be folded for posting accordingly.

The Port Meteorological Officers and Merchant Navy Agents inspect instruments in Meteorological log ships half-yearly, and in other observing ships quarterly, when possible; and they will replace as necessary any gear lent by the Meteorological Office. These officers will also check the accuracy of barometers, etc., in observing ships, but marine observers should themselves frequently check by comparison.

The work of the British observing fleet, that of the observing fleets of other nations party to the Convention for Safety of Life at Sea, together with Weather Shipping Bulletins and Gale and Hurricane Warnings conforming to the International Convention for Safety of Life at Sea, provide the necessary information for shipping. Thus a world wide service for all shipping, at the minimum cost to national funds, is provided. Shipowners are asked to facilitate this voluntary work which is done by the commanders and officers of their ships.

Shipowners will greatly assist by facilitating the forwarding of postal matter from the Air Ministry addressed to the Captains of ships.

The masters of all British ships fitted with wireless telegraphy are asked to assist in this service in aid of navigation by making routine wireless weather reports in accordance with the Selected Ship scheme where and when there are not Selected Ships carrying out the service.

With a view to stimulating this supplementary service of making weather reports in the Selected Ship service when and where there are not Selected Ships, a supplementary list of British Weather Reporting Ships is being made.

Only British ships suitably fitted with wireless telegraphy, and who have been visited by the Merchant Navy Agents to the Meteorological Office, and whose masters have then undertaken to perform this service, are included in this list, which is not published, but which is sent for information to stations working a roll call.

The masters of all British ships are advised to procure the pamphlet M.O.329, Decode for use with the International Code for Wireless Weather Messages from Ships, published and sold by H.M. Stationery Office, through any bookseller, price 6d.

M.O. 379, a Handbook of Weather, Currents, and Ice for Seamen, gives guidance in weather forecasting, also published by H.M. Stationery Office, price 4s. 0d.

NAUTICAL OFFICERS AND AGENTS OF THE MARINE DIVISION OF THE METEOROLOGICAL OFFICE, AIR MINISTRY.

LONDON ... ... Captain L. A. Brooke Smith, R.D., R.N.R., Marine Superintendent.
Commander J. Hennessy, R.D., R.N.R., Senior Nautical Assistant.
Room 205, Victory House, Kingsway, W.C.2.
(*Telephone No.: Holborn 3434 Extension 421.*)
Nearest station, Temple, District Railway.

THAMES ... ... Commander C. H. Williams, R.N.R., Port Meteorological Officer, P.L.A. Building, King George V Dock (south side), London, E.16. (*Telephone No.: Albert Dock 2659. Telegraphic Address: Barometric Aldock, London.*)

MERSEY ... ... Commander M. Cresswell, R.N.R., Port Meteorological Officer, Dock Office, Liverpool. (*Telephone No.: Bank 8959. Telegraphic Address: Meteorite, Liverpool.*)

Agents.

BRISTOL CHANNEL. Captain Edward Hall, 21, Dowlais Buildings, West Bute Street, Cardiff. (*Telephone No.: Cardiff 1268.*)

CLYDE ... ... Captain W. Henderson, 80, Buchanan Street, Glasgow, C.1. (*Telephone No.: Central 3775.*)

FORTH ... ... Captain G. More, Chief Dock Master's Office, Leith. (*Telephone No.: Leith 35481.*)

HUMBER ... W. H. Carr, Esq., Master Mariner, Ferensway Chambers, Ferensway, Hull. (*Telephone No.: Hull 16063.*)

SOUTHAMPTON Captain Sir Benjamin Chave, K.B.E. Room 35, Royal Mail House.

TYNE ... ... Captain F. B. West, Customs House Chambers, Quayside, Newcastle upon Tyne, 1. (*Telephone No.: Newcastle 23203.*)

DERELICTS AND FLOATING WRECKAGE.

Date.	Position.		Description.
	Latitude.	Longitude.	
	NORTH SEA.		
8.6.38	53° 33′ N.	1° 56′ E.	Heavy floating spar, 30 ft. long, dangerous.
	ENGLISH CHANNEL.		
17.6.38	48° 57′ N.	4° 30′ W.	Red buoy.
	MEDITERRANEAN.		
8.6.38	42° 07′ N.	7° 58′ E.	Tree trunk, 12 ft. long, dangerous.
	NORTH ATLANTIC.		
3.6.38	36° 52′ N.	8° 48′ W.	Unoccupied open boat.
3.6.38	37° 06′ N.	71° 21′ W.	Buoy consisting of a keg surmounted by a 20 ft. pole, and flag about 2 ft. square.
5.6.38	34° 38′ N.	74° 43′ W.	Heavy mast about 25 ft. long, 2 ft. diameter.
5.6.38	38° 52′ N.	74° 24′ W.	Black and white painted spar, projecting about 10 ft. out of water.
5.6.38	28° 39′ N.	73° 41′ W.	Rusty moss-covered steel spar buoy no marks.
6.6.38	42° 10′ N.	48° 30′ W.	Spar about 50 ft. long.
8.6.38	33° 47′ N.	47° 44′ W.	Red bell buoy.
	NORTH ATLANTIC—(*cont.*)		
9.6.38	40° 34′ N.	49° 35′ W.	Vertically drifting pole about 6 ft. long.
9.6.38	9° 40′ N.	79° 50′ W.	Log.
10.6.38	40° 55′ N.	30° 30′ W.	Dory half filled with water, painted red with white bottom.
16.6.38	46° 07′ N.	7° 23′ W.	Iron spar buoy, floating horizontally, covered with weed, about 20 ft. long.
19.6.38	48° 07′ N.	16° 21′ W.	Large conical buoy, drifting, dangerous.
	GULF OF MEXICO.		
1.6.38	29° 05′ N.	94° 14′ W.	Spar with ragged edges about 20 ft. diameter.
8.6.38	28° 47′ N.	89° 55′ W.	Partly submerged tree trunk about 5 ft. in diameter with large roots.
5.6.38	27° 14′ N.	88° 18′ W.	Partly submerged buff-painted raft about 20 ft. long and 10 ft. wide.
	NORTH PACIFIC.		
3.6.38	49° 48′ N.	127° 04′ W.	About 40 logs adrift.
4.6.38	40° 46′ N.	124° 51′ W.	Heavy log about 25 ft. long.
7.6.38	33° 17′ N.	117° 52′ W.	Steel buoy about 10 ft. long and 4 ft. diameter.

CHART OF THE WESTERN NORTH ATLANTIC.

Showing the North Atlantic Lane Routes in force during JULY as laid down by the Trans-Atlantic Track Convention. If at any time, owing to abnormal ice conditions, any alteration to the usual tracks is considered advisable by the track convention, particulars will be published on this chart. For full information concerning the North Atlantic Lane Routes see pages 62 and 63 of the April, 1938 number.

The periodic boundary within which ice has been observed is shown and a list of exceptional positions of ice observed in the North Atlantic during JULY is given. Ice sighted between JUNE 1st and 24th, 1938, is indicated by symbol in the position reported, the figure giving the day of the month in June. Information regarding ice conditions in Greenland waters and the Gulf of St. Lawrence will be published when available. Coastal wireless stations, with their call signs, which transmit ice signals are indicated by the symbol ⊕

Ice symbols used on the chart:— ⌂ Iceberg, ▭ growler, ∿∿∿ Field or other flat ice.

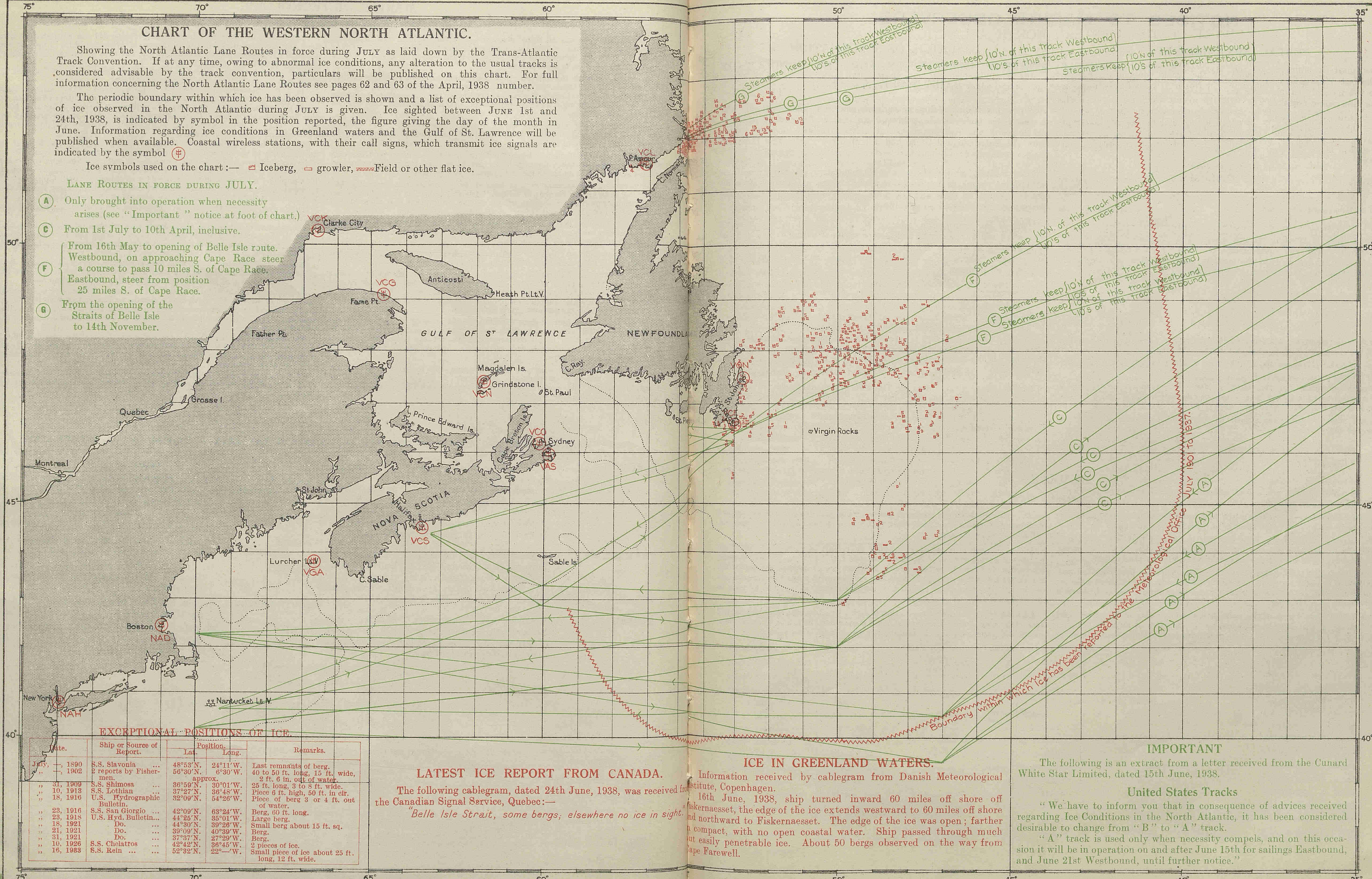
LANE ROUTES IN FORCE DURING JULY.

Ⓐ Only brought into operation when necessity arises (see "Important" notice at foot of chart.)

Ⓒ From 1st July to 10th April, inclusive.

Ⓕ From 16th May to opening of Belle Isle route. Westbound, on approaching Cape Race steer a course to pass 10 miles S. of Cape Race. Eastbound, steer from position 25 miles S. of Cape Race.

Ⓖ From the opening of the Straits of Belle Isle to 14th November.


75°
70°
65°
60°
50°
45°
40°
35°
Clarke City
VCK
Anticosti
Heath Pt. Lt. V.
VCG
Fame Pt.
Father Pt.
GULF OF ST LAWRENCE
NEWFOUNDLA
VCL
Pt. Amour
C. Norman
Magdalen Is.
Grindstone I.
VCN
St. Paul
C. Ray
St. Pierre
Quebec
Grosse I.
Montreal
Prince Edward Is.
Cape Breton Is.
VCO
Sydney
VAS
St. John
NOVA SCOTIA
Halifax
VCS
Lurcher L.V.
VGA
C. Sable
Sable Is.
Boston
NAD
New York
NAH
Nantucket Lt. V.
Virgin Rocks
Steamers keep {10' N. of this track Westbound / 10' S. of this track Eastbound}
Boundary within which Ice has been reported to the Meteorological Office, JULY 1901 to 1937.
A
C
F
G

EXCEPTIONAL POSITIONS OF ICE.

Date.	Ship or Source of Report.	Position.		Remarks.
		Lat.	Long.	
July, —, 1890	S.S. Slavonia ...	48°53′N.	24°11′W.	Last remnants of berg.
,, —, 1902	2 reports by Fishermen.	56°30′N. approx.	6°30′W.	40 to 50 ft. long, 15 ft. wide, 2 ft. 6 in. out of water.
,, 31, 1909	S.S. Shimosa ...	36°59′N.	30°01′W.	25 ft. long, 3 to 8 ft. wide.
,, 10, 1913	S.S. Lothian ...	37°27′N.	36°48′W.	Piece 6 ft. high, 50 ft. in cir.
,, 18, 1916	U.S. Hydrographic Bulletin.	32°09′N.	54°26′W.	Piece of berg 3 or 4 ft. out of water.
,, 23, 1916	S.S. San Giorgio ...	42°09′N.	63°24′W.	Berg, 60 ft. long.
,, 23, 1918	U.S. Hyd. Bulletin...	44°25′N.	35°01′W.	Large berg.
,, 18, 1921	Do. ...	44°30′N.	39°26′W.	Small berg about 15 ft. sq.
,, 21, 1921	Do. ...	39°09′N.	40°39′W.	Berg.
,, 31, 1921	Do. ...	37°37′N.	27°29′W.	Berg.
,, 10, 1926	S.S. Chelatros ...	42°42′N.	36°45′W.	2 pieces of ice.
,, 16, 1933	S.S. Rein	52°32′N.	22°—′W.	Small piece of ice about 25 ft. long, 12 ft. wide.

LATEST ICE REPORT FROM CANADA.

The following cablegram, dated 24th June, 1938, was received fro
the Canadian Signal Service, Quebec:—

"Belle Isle Strait, some bergs; elsewhere no ice in sight."

ICE IN GREENLAND WATERS.

Information received by cablegram from Danish Meteorological nstitute, Copenhagen.

16th June, 1938, ship turned inward 60 miles off shore off iskernaesset, the edge of the ice extends westward to 60 miles off shore nd northward to Fiskernaesset. The edge of the ice was open; farther n compact, with no open coastal water. Ship passed through much ut easily penetrable ice. About 50 bergs observed on the way from ape Farewell.

IMPORTANT

The following is an extract from a letter received from the Cunard White Star Limited, dated 15th June, 1938.

United States Tracks

"We have to inform you that in consequence of advices received regarding Ice Conditions in the North Atlantic, it has been considered desirable to change from "B" to "A" track.

"A" track is used only when necessity compels, and on this occasion it will be in operation on and after June 15th for sailings Eastbound, and June 21st Westbound, until further notice."

H.M. Stationery Office Press, Kingsway W.C.2.

Ps. 351/3484. Wt. 20A. D. 20. Gp. 948. 1050. 6/38.

NOTICES TO MARINE OBSERVERS.

POSTAL ARRANGEMENTS.

The quarterly numbers of the MARINE OBSERVER are published on the last Wednesdays of December, March, June and September, while the monthly supplements are published on the last Wednesday of the intervening months.

If captains of observing ships will forward to the Meteorological Office the particulars required hereunder, endeavour will be made as far as mails permit to post the latest number or supplement with appropriate forms for observational work for use on their homeward passage.

S.S..................................... *Captain*..

Port of Call..

Date of Homeward Departure...

Postal Address..

When this information is not given The MARINE OBSERVER or Supplement will be addressed to the Commanding Officer, s.s.........................., c/o the owners, and captains are requested to make their own arrangements for forwarding.

DESPATCH OF INFORMATION REQUIRED IMMEDIATELY FOR THE CONDUCT OF THE WORK AT SEA.

Shipowners, Marine Superintendents and all concerned in the despatch of mails to Ships abroad are asked to kindly facilitate the despatch and delivery of postal matter received at their offices from the Meteorological Office and Air Ministry Publication Depot to their Ships abroad.

This matter addressed to the Commanders of Ships contains information which is required for the Conduct of Marine Meteorological Work at Sea and is most effective if received by the Commanders at the earliest possible date.

Much of the information referred to is published in the MARINE OBSERVER and Supplements, and is of a seasonal nature. This journal also contains advice to Regular Observing Ships which enables them to perform voluntary service by Wireless Communication for the benefit of all shipping.

ICE OBSERVATION.

Drifting ice, derelicts, and other floating dangers to navigation are reported by all the means of communication at the disposal of the master.

See Appendix III, pages 106 to 108 of the MARINE OBSERVER'S HANDBOOK, Sixth Edition.

It is also desirable that more detailed information than can be given in a TTT wireless message should be available to the Meteorological Office for the purpose of research, and for the Admiralty Charts and Sailing Directions.

Marine observers will greatly assist by noting the conditions of ice, either drifting or fast.

For this purpose Form 912 is supplied direct to all regular observing ships using regions where ice may be encountered and this Form may be supplied to the Captain of any British ship on application to the Port Meteorological Officers and Merchant Navy Agents.

Regular observing ships using the Trans-North Atlantic tracks are requested to send in these Forms, not only when ice is encountered, but also when they have passed through the ice region during the ice season without encountering ice, in which case a "nil" report; since it is desirable as far as possible to determine when tracks have been clear of ice.

REMARKS.

Experientia docet.

Published experience is generally the best incentive to improvement of the work, and its adaptation to the needs of navigation.

The Captains of observing ships will greatly assist if they will write their experiences in the space provided for "Additional Remarks" at the end of the meteorological log and the record for synchronized weather observations.

Much interesting information of peculiar phenomena has been collected and published in the MARINE OBSERVER through the medium of these remarks by the observing officers; but it is desirable that the scope of the "Marine Observer's Log" should be made wider.

One of the main objects of the work is to promote safety of life at sea, and therefore the publication of experience by the Captains of ships in handling their ships in heavy weather, avoiding intense tropical revolving storms, making use of wireless intelligence of fog or bad visibility, the detection of unexpected variation in compass error, and other experiences in the avoidance of hazards, will all help other seamen.

Another object is to assist in making navigation economical. Therefore experience published in the "Marine Observer's Log" of ocean pilotage in cases where fuel and time have been saved, or where routes have been successfully chosen for the better carriage of particular cargoes, with respect to temperature of air and sea and general climates, or ocean currents, cannot fail to tend to improve national sea-borne commerce.

Experiences in improving ventilation of living quarters and cargo spaces will also be of value to the whole service, since these affect the health of ships' companies and passengers, and the condition in which cargo is delivered.

FLEET LIST.

VOLUNTARY OBSERVING SHIPS.

The following is a complete list of British observing ships regularly carrying out voluntary services of marine meteorology with the guidance of the Marine Division of the Meteorological Office.

The names of the Captains and observing officers of observing ships, and the Senior Wireless Operators of Selected Ships are given, as ascertained from the last written return received.

Meteorological Logs, Records, and W/T Weather Registers received between the dates specified at the head of the seventh column are acknowledged by Form number, with commencing and ending dates of period covered by the returns; the date when the last return was received being given in the eighth column.

The Captains of observing ships are requested to take this acknowledgment in cordial thanks and grateful recognition to them and their observing officers and wireless operators for the returns made and the voluntary service rendered in all parts of the world.

The classification of meteorological logs, records and registers will be notified to the Captains by post card Form 1343. Only in exceptional cases will individual letters be sent to the Captains of observing ships.

The Port Meteorological Officers and Merchant Navy Agents at the ports are advised as necessary, and they will, as necessary, communicate such advice verbally by personal call upon the Captain.

Excellent Awards will be made at the end of the financial year. The names of the Captains and Principal Observing Officers gaining these awards will be published in a special list in the Marine Observer.

It is requested that prior notification of changes of service, probable periods of lay up, transfer of Captains, or other circumstances which may prevent the continuance of voluntary meteorological service at sea, may be made to the appropriate Port Meteorological Officer or Merchant Navy Agent.

Ships not making the appropriate written returns within a reasonable period will be removed from the list, steps taken to recover any instruments lent, and the free issue of the Marine Observer discontinued.

The number of voluntary observing ships is limited to a maximum total of 350.

The number of Selected Ships detailed to carry out the voluntary service provided for in Clause (C) of Article 35 of the Convention for Safety of Life at Sea, Merchant Shipping (Safety and Load Line Conventions) Act, 1932, is determined by the British proportion of the world's tonnage; and is at present 279.

Captains are requested to point out any errors which may occur in the list.

Explanation of Abbreviations.

The number appearing before the name of an observing ship in this list is her number for the time being as a British Selected Ship.

†† indicates fitted with wireless telegraphic apparatus for long range, long wave, continuous wave transmission and reception.

*† indicates fitted with wireless telegraphic apparatus for transmission and reception; fitted for reception only of long range, long wave, continuous wave.

M.S. = Motor Ship.
(t-e) = Turbo-electric.
S.T. = Steam Trawler.
(tank) = Tanker.
Ships having no such letters after their names are steamships.

Abbreviations in Equipment Column.

M.L. = Equipped with a complete set of tested instruments lent by the Meteorological Office for keeping the meteorological log.
M. = Ships' own mercurial barometer, found to be sufficiently accurate and reliable for the purpose of observation for making wireless weather reports.
S. = Partly or wholly equipped with tested instruments lent by the Meteorological Office for the purpose of carrying out the duties of a Selected Ship, when detailed to do so.
A. = Ships' own aneroid.

Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Owners.	Logs, Registers, or Records Contributed. 10.3.38 to 7.6.38		Date Last Return Received.
275 †† *Abosso*, M.S. ...	J. C. Shooter	R. Inglis, O. Exley	G. Arrowsmith	M.-S.	Elder Dempster Lines, Ld.	Fms. 911 & 138	9.2.38 to 19.5.38	24.5.38
122 †† *Accra*, M.S. ...	P. Sola, D.S.O., Lt.-Commr., R.N.R.	H. C. Allen, T. H. Poll, P. S. Brailsford.	R. J. Dowling ...	,,	,, ,,	,, ,,	10.3.38 to 17.4.38	22.4.38
123 †† *Adda*, M.S. ...	E. Vaughan Davies, D.S.O.	L. Morrison, T. C. Cable, C. O'Sullivan.	G. Edwards ...	,,	,, ,,	,, ,,	28.1.38 to 23.4.38	28.4.38
090 *† *Aeneas*	J. Hatfield	W. Eusking, R. Masters, C. Lock.	H. C. Nuttall ...	S.	A. Holt & Co. ...	,, ,,	24.1.38 to 12.5.38	14.5.38
166 *† *Agamemnon*, M.S.	J. G. Reynard	W. C. McQuigan, J. R Atkinson, A. Harrison.	A. C. Nevin ...	,,	,, ,, ...	,, ,,	7.2.38 to 25.5.38	27.5.38
065 †† *Akaroa*	W. G. Summers ...	H. H. Falkiner, J. Foster, A. G. Mackenzie.	R. E. Hammond	,,	Shaw, Savill & Albion Co., Ld.	,, ,,	29.12.37 to 3.4.38	13.4.38
245 †† *Alaunia*	F. Cross, R.D., R.N.R.	A. Mackeller, I. D. W. Rand, F. Dennison.	C. G. Wood ...	,,	Cunard White Star Ld.	,, ,, Fm. 912	21.2.38 to 27.5.38 9.5.38 to 27.5.38	1.6.38 1.6.38
*† *Albion Star* ...	H. Palmer	... ...	... ...	M.	Blue Star Line, Ld.	... ...	... ...	...
129 †† *Alcantara* ...	T. J. C. Buret, D.S.C.	S. T. Whiteside, R.N.R., F. W. Fletcher, E. A. Littlewood.	E. Lewis ...	M.-S.	Royal Mail Lines, Ld.	Fms. 911 & 138	21.2.38 to 21.5.38	25.5.38
175 †† *Almanzora* ...	F. R. Miles, R.D., Capt., R.N.R.	G. M. Fletcher, K M. Drake, N. S. Seaton.	J. Caldwell ...	S.	,, ,, ,,	,, ,,	7.3.38 to 18.4.38	20.4.38
086 †† *Almeda Star* ...	H. C. Howard	J. L. Anson, R. Hampton, W. A. C. Hunt.	R. N. Austin ...	M.-S.	Blue Star Line, Ld.	,, ,,	13.3.38 to 3.5.38	6.5.38
022 *† *Alynbank*, M.S.	D. Gillies	L. Armitage, J. Murray, J. Henderson.	W. G. Houghton	S.	A. Weir & Co. ...	,, ,,	28.2.38 to 28.3.38	27.4.38
160 *† *Amarapoora* ...	S. Sinclair-Duncan ...	R. Treasurer, J. J. Steward, P. F. Carnochan.	A. M. Douglas...	,,	P. Henderson & Co.	,, ,,	6.3.38 to 16.5.38	21.5.38
*† *Amsterdam* ...	A. P. Sutton	F. B. Allen, E. J. Gould ...	D. T. Wright ...	,,	L. & N. E. Rly....	,, ,,	1.3.38 to 31.5.38	1.6.38
006 †† *Andalucia Star*	R. Vernon	E. P. S. Lewis, G. Honnor, N. Duell.	R. V. Gregory ...	M.-S.	Blue Star Line, Ld.	,, ,,	14.238 to 5.4.38	9.4.38
113 *† *Andania* ...	H. R. Oulsnam, R.D., R.N.R.	A. B. Fosting, S. A. Jones, E. A. Davies.	S. F. Wyatt ...	S.	Cunard White Star, Ld.	,, ,, Fm. 912	13.2.38 to 27.5.38 12.4.38 to 27.5.38	2.6.38 2.6.38
040 *† *Anselm*	F. C. P. Harris ...	J. Weyman, L. A. Sayers, R.N.R. S. Pollock,	J. O'Sullivan ...	,,	Booth S.S. Co., Ld.	Fms. 911 & 138	19.1.38 to 8.5.38	14.5.38
259 *† *Antonia* ...	J. Evans	H. J. Chaloner, H. G. Hayward, J. Law.	R. F. Watson ...	,,	Cunard White Star Ld.	,, ,, Fm. 912	28.2.38 to 14.5.38 28.3.38 to 14.5.38	17.5.38 17.5.38

Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteorologicai Instrument Equipment.	Owners.	Logs, Registers, or Records Contributed. 10.3.38 to 7.6 38.		Date Last Return Received.
120 †† *Apapa*, M.S. ...	J. H. Lawson	L. Collings, F. N. West ...	J. Rea	M.-S.	Elder Dempster Lines, Ld.	Fms. 911 & 138	31.3.38 to 6.5.38	10.5.38
017 †† *Aquitania* ...	G. Gibbons, R.D., RN.R.	R. W. Pickersgill, D. Mclean, W. T. Fitzgerald.	J. N. Cragg ...	S.	Cunard White Star, Ld.	,, ,,	10.2.38 to 25.4.38	27.4.38
201 †† *Arandora Star* ...	E. W. Moulton	J. E. Taylor, W. H. Evans...	S. T. Williams ...	M.-S.	Blue Star Line, Ld.	,, ,,	24.1.38 to 29.5.38	6.6.38
248 *† *Arawa*	T. V. Roberts, R.D., Capt., R.N.R.	D. Hewett, J. Farrow, W. Dickson.	G. W. Bailey ...	M.	Shaw, Savill & Albion Co., Ld.	,, ,,	19.3.38 to 20.4.38	2.6.38
*† *ArcticRanger*, S.T.	J. W. Hamling ...	J. W. Hamling	J. Anderson ...	S.	Boyd Line, Ld.	,, ,, Fm. 912	4.3.38 to 26.5.38 10.4.38 to 26.5.38	30.5.38 30.5.38
114 *† *Ariguani* ...	R. A. Thorburn, R.D., Commr., R.N.R.	C. R. Hodder, B. R. Coe, J. Hughes.	B. M. Evans ...	,,	Elders & Fyffes, Ld.	Fms. 911 & 138	22.2.38 to 28.5.38	30.5.38
039 †† *Arlanza*... ...	A. Cocks, D.S.C., R.D., R.N.R.	S. B. Medlycott, T. W. Bolland J. H. Rouse.	G. Hunt ...	,,	Royal Mail Lines, Ld.	,, ,,	8.2.38 to 13.5.38	17.5.38
092 †† *Arundel Castle* ...	C. E. Aylen, R.D., R.N.R.	N. K. Boyd	W. A. Brown ...	,,	Union-Castle Mail S.S. Co., Ld.	,, ,,	5.3.38 to 21.4.38	23.4.38
233 †† *Ascania* ...	G. E. Barton, R.D., R.N.R.	P. L. Williams, H. Morgan, J. A. S. Halcrow.	J. W. Haynes ...	,,	Cunard White Star, Ld.	,, ,,	18.4.38 to 2.5.38	12.5.38
013 †† *Asturias* ...	A. Purvis	R. Finch, W. P. Megan, M. M. Weeks.	T. Bradfield ...	,,	Royal Mail Lines, Ld.	,, ,,	23.3.38 to 20.4.38	27.4.38
091 †† *Athenia*... ...	W. Rennie	A. M. Mackinnon, L. Napier, J. R. Henderson.	D. Don	,,	Donaldson Atlantic Line.	,, ,, Fm. 912	11.7.37 to 24 9.37 16.5.37 to 3.7.37	26.11.37 9.7.37
028 †† *Athlone Castle*, M.S.	E. S. Vincent, R.D., R.N.R.	S. Thompson, N. Wilford ...	J. Hodgson ...	,,	Union-Castle Mail S.S. Co., Ld.	Fms. 911 & 138	19.2.38 to 1.6.38	7.6.38
199 †† *Atlantis* ...	H. D. Womersby ...	A. J. G. Barff, E. Card, K. M. Cutler.	W. H. Chick ...	M.-S.	Royal Mail Lines, Ld.	,, ,,	26.1.38 to 14.5.38	18.5.38
208 *† *Aurania* ...	R. J. Finlowe, R.D., R.N.R.	W. S. Tanner, J. H. Kenworthy, J. K. Nicholson.	S. K. Alston ...	S.	Cunard White Star, Ld.	,, ,, Fm. 912	10.4.38 to 30.4.38 9.4.38 to 15.4.38	4.5.38 4.5.38
103 *† *Ausonia* ...	C. H. Bate	J. T. Marr, A. H. Young, J. D. Armstrong.	S. A. Arnold ...	,,	,, ,,	Fms. 911 & 138 Fm. 912	28.3.38 to 21.5.38 1.5.38 to 21.5.38	23.5.38 23.5.38
046 *† *Australia Star*, M.S.	J. Fisher	J. Davis, C. Munday, J. Gallienne.	J. St. C. Smart	M.-S.	Blue Star Line, Ld.	Fms. 911 & 138	21.1.38 to 25.4.38	28.4.38
133 †† *Avelona Star* ...	G. E. Hopper	P. Clark, C. J. Gross, L. S. Warren.	A. Shippam ...	,,	,, ,,	,, ,,	2.2.38 to 22.5.38	26.5.38
045 †† *Avila Star* ...	N. J. Thomas ...	S. Manson, S. Dickers, J. Medden.	H. Varley ...	,,	,, ,,	,, ,,	23.1.38 to 18.5.38	20.5.38
068 †† *Balmoral Castle*	W. S. Colburn, O.B.E., R.D., R.N.R.	M. A. Buttey	... ...	S.	Union-Castle Mail S.S. Co., Ld.	,, ,,	21.1.38 to 15.5.38	20.5.38
110 *† *Balmoralwood* ...	O. Stoker - Johnson, D.S.C.	K. D. Casing, J. C. Nicholson, R. Coates.	A. E. Bissit ...	,,	Constantine Steamships, Ld.	,, ,, Fm. 912	19.1.38 to 14.5.38 10.4.38 to 14.5.38	24.5.38 24.5.38
037 *† *Baronesa* ...	R. W. Compton ...	J. R. Faulkner, F. W. Kent, A. Brightwell.	L. G. Hosking ...	M.	Furness Lines, Ld.	Fms. 911 & 138	30.1.38 to 30.3.38	4.4.38
209 *† *Bassano*... ...	A. H. Best	J. E. Stott, S. G. Poskitt, W. K. Tadman.	C. G. O'Keeffe	S.	Ellerman's Wilson Line, Ld.	Fms. 911 & 138 Fm. 912	2.3.38 to 15.5.38 20.4.38 to 15.5.38	20.5.38 19.5.38
180 *† *Beaverbrae* ...	E. J. Jones	S. P. Berna	T. A. Evans ...	M.-S.	Canadian Pacific Steamships, Ld.	Fms. 911 & 138 Fm. 912	12.3.38 to 1.5.38 12.3.38 to 13.5.38	19.5.38 19.5.38
130 *† *Beaverburn* ...	A. S. Phillips	D. E. T. Newell, W. E. Halbert, G. N. Ball.	S. J. Taylor ...	,,	,, ,,	Fms. 911 & 138 Fm. 912	2.4.38 to 28.5.38 2.4.38 to 28.5.38	1.6.38 1.6.38
138 *† *Beaverdale* ...	A. Rothwell	B. R. Russel, D. Ewing, R. J. Barlow.	J. Ormiston ...	,,	,, ,,	Fms. 911 & 138 Fm. 912	6.3.38 to 1.5.38 10.4.38 to 1.5.38	6.5.38 6.5.38
279 *† *Beaverford* ...	W. Pettigrew	R. Walgate, F. Roberts, P. Locke.	J. C. Fraser ...	,,	,, ,,	Fms. 911 & 138 Fm. 912	19.2.38 to 7.5.38 16.4.38 to 7.5.38	12.5.38 12.5.38
*† *Benarty*... ...	J. Watt	A. Ramsay, F. Tait, N. Crow	R. W. Lucan ...	M.	W. Thomson & Co.	Fm. 911	23.3.38 to 23.4.38	23.5.38
*† *Benmohr* ...	J. C. Sinclair	A. V. Anderson, A. Griffiths, G. W. Patterson, J. Brown.	... ...	M.L.	,, ,,	Fms. 915 & 138	2.10.38 to 20.3.38	28.3.38
111 *† *Benwyvis* ...	H. J. Small	W. M. Marshall, W. P. Sollam, N. Fraser. ...	R. H. V. Gillibrand	M.	,, ,,	,, ,,	14.3.38 to 4.5.38	30.5.38
145 *† *Berwickshire* ...	W. R. Roberts ...	H. W. Chadd, T. F. Millett, T. E. McCulloch.	W. G. Peddie ...	S.	Turnbull, Martin & Co., Ld.	,, ,,	18.3.38 to 5.4.38	25.5.38
007 *† *Bradfyne* ...	M. O'Neill	H. F. Thomas, P. Evans, S. Hewitt.	R. Morgan ...	,,	Sir Wm. Reardon Smith & Partners, Ld.	,, ,,	26.4.37 to 3.12.37	18.12.37
*† *Brighton* ..	B. Show, W. Lidbetter	E. Balcombe	A. Jones ...	,,	Southern Rly. ...	,, ,,	12.4.37 to 30.5.38	2.6.38
*† *Brisbane Star*, M.S.	F. N. Riley	... ...	... ...	M.-S.	Blue Star Line ..	... ...	... ...	...
189 †† *Britannic*, M.S.	A. T. Brown, R.D., Capt., R.N.R.	K. M. Nicolson, J. F. Drake, J. C. Dawson.	F. Clark ...	S.	Cunard White Star, Ld.	Fms. 911 & 138 Fm. 912	16.4.38 to 20.5.38 15.4.38 to 20.5.38	25.5.38 24.5.38
106 *† *British Colonel* (tank)	E. H. Fulcher ...	R. H. Mowbray, S. Rennels, R. Thompson.	A. K. Evans ...	M.	British Tanker Co., Ld.	Fms. 911 & 138	18.2.38 to 24.4.38	30.4.38
038 *† *British Corporal* (tank)	R. M. Thorburn ...	W. G. Philpin, A. Caldwell, C. T. Forster	H. D. Smythe ...	,,	,, ,,	,, ,,	15.2.38 to 12.5.38	24.5.38
*† *British Diplomat*, M.S. (tank)	R. M. Maughan ...	R. T. Williams	A. C. Smith ...	,,	,, ,,	,, ,,	9.1.38 to 6.3.38	11.3.38
153 *† *British Endurance*, M.S. (tank)	R. O. Putt	J. D. Johnston, M. Hutchinson	W. Read ...	,,	,, ,,	,, ,,	28.1.38 to 26.4.38	4.5.38
054 *† *British General* (tank)	J. A. Gilchrist ...	P. E. Norton, R. C. Flamstead, D. M. Walker.	R. G. Davies ...	,,	,, ,,	,, ,,	25.2.38 to 12.5.38	1.6.38
*† *British Grenadier* (tank)	J. A. Ferrier	E. J. Simpson, D. L. O. Smith, C. H. Humphries.	T. Gledhill ...	,,	,, ,,	,, ,,	2.3.38 to 28.5.38	2.6.38
*† *British Gunner* (tank)	W. G. Stook	... ...	... ...	,,	,, ,,	... ...	... ...	...
257 *† *British Hussar* (tank)	F. O. Armstrong ...	G. R. Mackillican, R. T. Williams, B. W. Hope.	R. Mortimer ...	,,	,, ,,	Fms. 911 & 138	7.3.38 to 24.5.38	31.5.38
076 *† *British Officer* (tank)	W. Watkin-Thomas ...	C. E. Tanner, A. Wilson, K. Johnson.	J. L. Howlett ...	,,	,, ,,	,, ,,	8.2.38 to 16.5.38	26.5.38
*† *British Premier* (tank)	B. M. Naylor	W. H. Sharp, R. Knight, C. W. Ridge.	F. J. Park ...	,,	,, ,,	,, ,,	21.2.38 to 15.5.38	25.5.38
*† *British Resolution* M.S. (tank)	R. H. Farrington ...	W. Graham, S. Wilkinson, H. Were.	L. G. Sparks ...	,,	,, ,,	Fm. 911	9.2.38 to 31.3.38	9.5.38
225 *† *British Statesman* (tank)	F. J. Goodchild ...	F. P. Newbolt, J. V. Robinson	J.H.S.Macdonald	,,	,, ,,	Fms. 911 & 138	30.1.38 to 16.5.38	25.5.38
273 *† *British Strength*, M.S. (tank)	J. C. Leybourne ...	F. W. Willis, S. A. Caws, F. McMillan.	L. A. Jones ...	,,	,, ,,	Fm. 911	6.2.38 to 24.3.38	4.4.38
*† *British Workman* (tank)	S. D. Brunstead ...	R. T. Hedley	B. W. Bennet ...	,,	,, ,,	Fms. 911 & 138	25.1.38 to 4.6.38	7.6.38
249 *† *Buteshire* ...	S. Y. Strange	E. C. Hobbs	W. W. Whewell	S.	Houston Line ...	Fms. 911 & 138	25.10.37 to 10.1.38	21.1.38
200 *† *Cairnesk* ...	E. A. Organ	R. D. Radcliffe, S. W. Parks	F. A. Munday ...	,,	Cairns, Noble & Co., Ld.	Fms. 911 & 138 Fm. 912	21.3.38 to 10.5.38 21.3.38 to 29.5.38	1.6.38 1.6.38
241 *† *Cairnglen* ...	A. W. Melling	A. Molineux	R. A. Penny ...	,,	,, ,,	Fms. 911 & 138 Fm. 912	22.2.38 to 17.5.38 22.2.38 to 17.5.38	20.5.38 20.5.38
*† *Cairnross* ...	L. Halcrow	A. J. Dunn, D. Eason, T. Sutherland.	H. Jardine ...	,,	,, ,,	Fms. 911 &138 Fm. 912	7.3.38 to 2.4.38 7.3.38 to 2.4.38	6.4.38 6.4.38
075 *† *Cairnvalona* ...	A. C Dickson	E. Cairns, J. R. Smith, R. Houston.	J. Sargent ...	,,	,, ,,	Fms.911 & 138 Fm. 912	10.4.38 to 10.5.38 10.4.38 to 10.5.38	12.5.38 12.5.38
031 †† *Caledonia* ...	A. Collie	H. L. P. King, J. Simpson, R. Blake.	J. F. Reid ...	,,	Anchor Line, Ld.	Fms. 911 & 138 Fm. 912	19.2.38 to 27.5.38 22.2.38 to 27.5.38	30.5.38 30.5.38

Name of Vessel.	Captain	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Owners.	Logs, Registers, or Records Contributed. 10.3.38 to 7.6.38	Date Last Return Received.
139 †† *California* ...	R. W. Smart	H. D. Campsie, T. D. Mackenzie, D. Barclay.	D. Thompson ...	S.	Anchor Line, Ld.	Fms. 911 & 138 4.3.38 to 19.5.38 Fm. 912 13.5.38 to 19.5.38	23.5.38 23.5.38
*† *Cambria* ...	E. B. Turner	F. E. Williams	J. Pritchard ...	,,	L.M. & S. Rly. ...	Fms. 911 & 138 24.2.38 to 17.5.38	14.5.38
223 *† *Cambridge* ...	A. Angell	G. E. Mason, T. Norris, J. Lodge.	P. McConnach ...	,,	Federal S.N. Co., Ld.	,, ,, 3.1.38 to 24.5.38	1.6.38
042 †† *Cameronia* ...	G. B. Kelly	J. George, F. F. Caldwell ...	W. C. N. Ness ...	,,	Anchor Line, Ld.	,, ,, 6.3.38 to 12.5.38 Fm. 912 4.3.38 to 12.5.38	16.5.38 16.5.38
252 *† *Camito*	R. J. Bostock	R. Philpott, D. M. Baker, R. D. Jones.	R. E. Blizzard ...	,,	Elders & Fyffes, Ld.	Fms. 911 & 138 16.2.38 to 21.5.38	26.5.38
*† *Cape Comorin* S.T.	W. Jonsen	... ...	... ...	,,	Hudson Steam Fishing Co. Ld.	... ...	...
117 *† *Cape of Good Hope* M.S.	A. T. McGlashan ...	R. J. Carnochan, P. A. Wallace J. B. Hill.	G. W. Pragnell...	,,	Lyle Shipping Co., Ld.	Fms. 911 & 138 1.1.38 to 16.3.38	22.4.38
188 †† *Capetown Castle*, M.S.	A. Barron	... ...	... ...	,,	Union Castle Mail SS. Co. Ld.	... ...	...
266 †† *Carinthia* ...	A. C. Greig, O.B.E., R.D., R.N.R. ...	J. W. Tone, J. C. Boyle, W. L. Cox.	R. M. Shore ...	,,	Cunard White Star, Ld.	Fms. 911 & 138 4.3.38 to 15.5.38 Fm. 912 25.4.38 to 15.5.38	18.5.38 18.5.38
264 †† *Carnarvon Castle*, M.S.	A. H. Blackman ...	... ...	... ...	,,	Union Castle Mail S.S. Co., Ld.	... ...	...
155 †† *Carthage* ...	H. M. Jack	M. Greasley, A. E. Clay, A. A. Terry.	F. Rose ...	M.-S.	P. & O. S.N. Co.	Fms. 911 & 138 19.12.37 to 24.3.38	2.4.38
184 †† *Cathay*	H. R. Rhodes	D. West, F. Squires, F. H. J. Orton.	E. L. Boyce ...	,,	,, ,, ,,	,, ,, 27.1.38 to 2.3.38	4.3.38
127 *† *Cavina*	W. T. Forrester, O.B.E.	W. J. Maxwell, W. E. A. Duff	A. N. Taylor ...	S.	Elders & Fyffes, Ld.	,, ,, 9.3.38 to 7.5.38	16.5.38
011 †† *Ceramic* ...	H. C. Elford	G. F. Cresswell, W. J. Stranger J. W. Paine.	W. M. Ross ...	,,	Shaw, Savill & Albion Co., Ld.	,, ,, 17.1.38 to 4.5.38	9.5.38
029 *† *Cheshire*, M.S. ...	P. H. Potter	J. B. Quinn, A. N. Williamson, N. F. Fitch.	F. W. Greaves ...	,,	Bibby Bros. & Co.	,, ,, 21.3.38 to 18.5.38	24.5.38
067 *† *Chinese Prince*, M.S.	W. Finch	A. H. Kent, E. J. Roberts, D. G. P. Tait.	D. T. de Witt ...	M.L.	Furness Lines Ld.	Fm. 915 12.11.37 to 7.3.38	23.3.38
192 †† *Chitral*	W. E. L. S. Pocock ...	C. E. Lord, R. H. Turner, A. C. Halliday.	W B. Goodsell	M.-S.	P. & O. S.N. Co.	Fms. 911 & 138 6.12.37 to 9.3.38	19.3.38
051 *† *City of Auckland*	H. G. Jenkins, O.B.E.	D. C. Hamilton, B. M. Postlethwaite.	P. Shine ...	S.	Ellerman Lines, Ld.	,, ,, 20.1.38 to 6.5.38	18.5.38
135 *† *City of Barcelona*	W. Hill	R. A. Jones, H. G. Williams, J. M. Walker	J. Houghney ...	M.	,, ,, ,,	,, ,, 17.3.38 to 13.5.38	16.5.38
265 *† *City of Baroda*	A. V. Radcliffe, R.D., Commr., R.N.R.	R. S. Steel, W. L. Smith, J. R. Roland.	R. O. Macara ...	S.	,, ,, ,,	,, ,, 14.3.38 to 19.5.38	26.5.38
057 ††*City of Benares* ...	A. Lee	H. H. Asher, F. Nuttal, S. J. Findlay.	A Fairweather	M.-S.	,, ,, ,,	,, ,, 4.3.38 to 23.5.38	25.5.38
158 *† *City of Cairo* ...	A. N. Hogg	S. E. Britt, T. Haynes ...	G. S. Creighton	M.	,, ,, ,,	,, ,, 1.3.38 to 12.5.38	16.5.38
215 *† *City of Canberra*	H. R. Jackson ...	A. Travis, C. Cheyney, J. Sapp	C. Kerrage ...	,,	,, ,, ,,	,, ,, 1.3.38 to 26.3.38	29.4.38
033 *† *City of Canton* ...	E. Scrymgeour... ...	R. W. Tyrrell, W. E. Fletcher, E. Routledge.	J. H. Beswick ...	,,	,, ,, ,,	,, ,, 25.1.38 to 16.5.38	25.5.38
157 *† *City of Delhi* ...	F. W. Penberthy ...	W. Nimmo, T. Lovell, J. Wotherspoon.	T. A. Walker ...	S.	,, ,, ,,	,, ,, 2.2.38 to 9.3.38	19.4.38
030 *† *City of Dieppe*	W. J. Merchant ...	J. Mitchell, E. A. Chapman, W. Wilson.	R. H. Hallam...	,,	,, ,, ,,	,, ,, 11.1.38 to 16.5.38	20.5.38
049 *† *City of Evansville*	F. McKay	F. P. Monkton, A. G. Freeman, F. W. Woods.	F. J. Glynn ...	M.	,, ,, ,,	,, ,, 22.12.37 to 7.3.38	18.5.38
220 †† *City of Exeter* ...	D. L. Lloyd	P. C. Wilson, R. S. Webber, S. C. Pye.	J. Wilson ...	S.	,, ,, ,,	,, ,, 9.1.38 to 19.3.38	30.4.38
089 *† *City of Hereford*	R. A. Grove	N. Williams, I. M. McBeath, W. R. Carr.	A. Goodman ...	M.	,, ,, ,,	,, ,, 6.1.38 to 5.5.38	21.5.38
237 †† *City of London*...	J. Wyper	W. J. Dixon	O. A. Read ...	S.	,, ,, ,,	,, ,, 7.3.38 to 15.5.38	18.5.38
256 *† *City of Lyons* ...	T. Cooper	J. W. Coubbon, G. Roberts, W. E. James.	W. R. Beynon ...	M.	,, ,, ,,	,, ,, 1.3.38 to 13.4.38	6.6.38
066 †† *City of Nagpur*...	N. McNeil, O.B.E. ...	E. Fawcett, T. Morgan, N. G. Roundwater.	A. E. Dowe ...	S.	,, ,, ,,	,, ,, 8.2.38 to 17.4.38	20.4.38
074 †† *City of Paris* ...	L. Nicol	W. G. Stubbs, A. J. Barnett, C. Clark.	G. Fenton ...	,,	,, ,, ,,	,, ,, 14.12.37 to 13.2.38	21.2.38
271 *† *City of Roubaix*	H. Spencer, D.S.C. ...	S. G. Hyder, A. H. G. Jones P. R. Winship.	S. G. Twigg ...	M.	,, ,, ,,	,, ,, 15.3.38 to 19.5.38	28.5.38
272 *† *City of Singapore*	T. R. Watkins	K. B. James, G. Mathias, R. H. Broadbent.	J. J. Stephenson	,,	,, ,, ,,	,, ,, 27.10.37 to 8.12.37	24.1.38
035 *† *City of Sydney* ...	E. J. Myles	C. P. B. Bradbury, E. M. Robertson, R. M. Hall.	D. Uttley ...	,,	,, ,, ,,	,, ,, 3.2.38 to 1.5.38 Fm. 912 3.2.38 to 17.2.38	7.5.38 21.3.38
167 *† *City of Tokio* ...	G. Burton	J. H. Aldridge, M. L. Hernan, R. K. Walker.	R. B. Miller ...	S.	,, ,, ,,	Fms. 911 & 138 28.1.38 to 6.4.38	8.4.38
136 *† *City of Winchester*	W. S. Coughlan ...	H. Laird, W. Scott-Craig, H. Lewis.	R. Ellison ...	,,	,, ,, ,,	Fm. 911 19.2.38 to 19.5.38	28.5.38
125 *† *City of Windsor*	E. E. Bulkeley ...	G. D. B. Davies, N. Bradley, L. E. Smith.	S. J. Harris ...	,,	,, ,, ,,	Fms. 911 & 138 19.4.38 to 7.5.38	19.5.38
027 *† *Clan Farquhar* ...	H. G. Pengelly... ...	J. Browne, J. H. Holman, T. H. Grahame,	G. S. Macpherson	M.	Clan Line Steamers, Ld.	,, ,, 1.3.38 to 20.4.38	30.5.38
050 *† *Clan Macalister*	R. W. Mackie... ...	M. Bruce, J. Hubbard, S. M. Werrey-Easterbrook.	C. J. Andrews ...	S.	,, ,, ,,	,, ,, 7.2.38 to 11.5.38	23.5.38
222 *† *Clan Macdougall*, M.S.	C. C. Parfitt	B. Grindley, H. F. Town, T. O. Craze.	H. A. Croft ...	,,	,, ,, ,,	,, ,, 18.2.38 to 2.4.38	9.4.38
101 *† *Clan Macfarlane*	W. J. Hughes	G. A. Fox, R. F. Carter, G. Matheson.	W. T. Ash ...	,,	,, ,, ,,	,, ,, 13.1.38 to 27.3.38	31.3.38
118 *† *Clan Macindoe*...	H. Andrews	E. H. Pyett, A. S. Palethorpe-May, K. C. Simpson	A. G. Olsen ...	,,	,, ,, ,,	,, ,, 12.3.38 to 31.3.38	19.4.38
082 *† *Clan Macnair* ...	R. J. W. Bennett ...	T. O. Marr, R. W. Crawford, R. W. Cook.	J. L. Jones ...	,,	,, ,, ,,	,, ,, 6.2.38 to 23.4.38	17.5.38
255 *† *Clan Macneil* ...	H. E. G. Scott Smith, O.B.E., R.D., Lieut.-Commr. R.N.R.	W. R. Thomas, D. Devall F. Coultas, J. C. Matheran.	W. Hayes ...	,,	,, ,, ,,	,, ,, 20.1.38 to 24.3.38	9.5.38
001 *† *Clan Macphee* ...	H. C. Simpson ...	R. C. Steel, T. Gillies ...	W. Scott ...	,,	,, ,, ,,	,, ,, 19.1.38 to 27.4.38	18.5.38
168 *† *Clan Mactaggart*	C. C. Parfitt	N. F. Stewart, J. de Garis, T. Gillies.	J. G. Wood ...	,,	,, ,, ,,	,, ,, 6.2.38 to 26.2.38	3.3.38
261 *† *Clan Mactavish*	R. P. Galer, R.D., R.N.R.	J. McIvor, S. C. Woods, J. S. Meaton	A. M. Forbes ...	,,	,, ,, ,,	,, ,, 3.4.38 to 31.5.38	6.6.38
002 *† *Clan Macwhirter*	E. E. Arthur	A. Woodall, J. V. Findlay, T. P. Cranwill.	J. Marshall ...	,,	,, ,, ,,	,, ,, 25.1.38 to 11.2.38	4.4.38
109 *† *Clan Morrison* ...	B. A. Hardinge ...	S. Lewis, K. W. Davies, F. B. Fairweather, H. Jones.	C. Ashton ...	,,	,, ,, ,,	,, ,, 1.5.38 to 24.5.38	7.6.38
*† *Clement* ...	R. B. Furneaux ...	T. E. Williams, C. Smethurst	W. H. Rathmell	,,	Booth S.S. Co., Ld.	,, ,, 14.3.38 to 3.5.38	17.5.38

Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Owners.	Logs, Registers, or Records Contributed. 10.3.38 to 7.6.38	Date Last Return Received.
041 *† *Clydebank*, M.S.	W. Broome	C. W. Haycraft, J. R. Mahon, E. W. Dibble.	A. J. Lamont ...	S.	A. Weir & Co. ...	Fms. 911 & 138 4.2.38 to 16.3.38	7.4.38
084 *† *Clydefield*, M.S. (tank)	D. A. Law, R.D., R.N.R.	H. Humphries, M. H. Hooker	W. J. Fergusson	,,	Hunting & Son, Ld.	,, ,, 2.3.38 to 21.5.38	25.5.38
016 *† *Comliebank*, M.S.	V. Harper	H. S. Brown, S. I. Pethurst, F. W. More.	C. R. H. Jarmy	,,	A. Weir & Co. ...	,, ,, 17.12.37 to 11.2.38	5.3.38
Como	E. S. Green	... ...	... ...	M.L.	Ellerman's Wilson Line	... ...	...
185 †† *Comorin* ...	W.L.Pope, R.D., R.N.R.	P. C. Reid, N. H. Thompson, E. J. Spurling.	E. Howard ...	M.-S.	P. & O. S.N. Co.	Fms. 911 & 138 3.1.38 to 15.4.38	19.4.38
*† *Consuelo* ...	J. L. Sibree	F. Ellison, J. B. Dunkley, G. K. Brooke.	J. Greer ...	S.	Ellerman Wilson Line, Ld.	Fm. 911 31.1.38 to 14.4.38	19.4.38
198 *† *Contractor* ...	H. Collins	R. H. Platts, W. H. Allen, R. Ledger.	E. W. Robson ...	M.	T. & J Harrison	Fms. 911 & 138 25.3.38 to 20.5.38	27.5.38
258 †† *Corfu*	J. K. Chaplin, R.D., Capt., R.N.R.	J. S. Sutherland, W. T. C. Lethbridge, H. V. Williamson.	R. V. McCreath	M.-S.	P. & O. S.N. Co.	,, ,, 21.11.37 to 25.2.38	10.3.38
214 *† *Counsellor* ...	A. H. Frew	J. Haycocks, D. Perry.	W. Fox... ...	M.	T. & J. Harrison	,, ,, 14.12.37 to 9.2.38	17.2.38
191 *† *Crispin*	S. N. White, R.D., R.N.R.	W. H. Cross, A. A. Gerrard, W. W. Torkington.	T. J. A. Tynan	S.	Booth S.S. Co., Ld.	,, ,, 4.2.38 to 21.3.38	1.4.38
*† *Culebra*	P. Cooper	... ...	... ...	,,	Royal Mail Lines, Ld.	... ...	...
036 *† *Cumberland* ...	E. A. Burton	N. C. M. Campbell	M. J. Lowless ...	,,	Federal S.N. Co., Ld.	Fms. 911 & 138 13.9.37 to 15.2.38	9.4.38
274 *† *Custodian* ...	D. A. McCallum ...	... ...	D. J. Murphy ...	M.	T. & J. Harrison	,, ,, 17.1.38 to 31.3.38	5.4.38
219 *† *Dearne*	T. H. Woodhead ...	C. E. Allen, H. W. Crabtree, R. Wise.	R. D. Akers ...	S.	L.M. & S. Rly. ...	,, ,, 15.1.38 to 28.5.38	6.6.38
194 *† *Deebank* ...	A. S. Reed	E. J. Normoyle	... ...	,,	A. Weir & Co. ...	,, ,, 25.9.37 to 17.1.38	27.1.38
204 †† *Derbyshire*, M.S.	G. L. English	A. Beharrel, G. Meggitt, G. Mordaunt.	D. McLellan ...	,,	Bibby Bros. & Co.	,, ,, 2.1.38 to 9.3.38	21.3.38
061 *† *Devon*	J. Blencowe	H. C. Turner, H. Watkins, D. Bunn.	C. Lewis ...	M.	British India S.N. Co., Ld.	,, ,, 27.1.38 to 22.5.38	6.6.38
*† *Diplomat* ...	J. J. Egerton	D. H. Bryant, R. Sutcliffe, A. Watson	T. Addingley ...	,,	T. & J. Harrison	,, ,, 18.1.38 to 6.4.38	13.4.38
072 *† *Director* ...	E. A. Pearce	J. Tooth, G. Cauphy ...	W. Gordon ...	,,	,, ,,	,, ,, 31.12.37 to 12.2.38	13.4.38
115 *† *Discovery II., R.R.S.*	L. C. Hill, O.B.E., Lieut., R.N.R.	H. Kirkwood, D. D. Bone, M. G. Mackendrick.	A. E. Morris ...	M.L.	Discovery Committee.	Fm. 915 8.10.37 to 30.1.38	7.3.38
096 *† *Don*	C. E. Tree	L. A. White	J. Orifill ...	S.	Associated Humber Lines.	Fms. 911 & 138 30.10.37 to 18.12.37	23.12.37
058 *† *Dorset*, M.S. ...	C. Matthews	K. H. Barclay, T. M. Devitt, E. G. Ott.	J. H. Dance ...	M.	Federal S.N. Co., Ld.	,, ,, 29.9.37 to 23.1.38	24.2.38
142 †† *Duchess of Atholl*	W. B. Coyle, R.D., Commr., R.N.R.	A. D. Morrison, C. Atkinson, W. R. Thorburn.	E. Murphy ...	M.-S.	Canadian Pacific Steamships, Ld.	,, ,, 16.4.38 to 2.6.38 Fm. 912 15.5.38 to 2.6.38	7.6.38 7.6.38
152 †† *Duchess of Bedford.*	A. R. Meikle, R.N.R....	E. J. Oatridge, E. Roberts, L. Davies.	A. O'Sullivan ...	,,	,, ,,	Fms. 911 & 138 13.3.38 to 26.5.38 Fm. 912 13.3.38 to 26.5.38	31.5.38 31.5.38
151 †† *Duchess of Richmond.*	H. A. Moore, R.D., Capt., R.N.R.	J. Soames, F. Falconer, J. Roche.	I. F. Yorston ...	S.	,, ,,	Fms. 911 & 138 24.1.38 to 19.5.38 Fm. 912 20.3.38 to 19.5.38	21.6.38 20.5.38
143 †† *Duchess of York*	C. Richardson ...	W. Ashcroft, R. A. Sharp, R. Burns.	J. Sullivan ...	M.-S.	,, ,,	Fms. 911 & 138 27.2.38 to 27.5.38 Fm. 912 27.2.38 to 13.5.38	6.6.38 16.5.38
*† *Duke of Argyll* ...	J. W. Richmond ...	W. Bleakley, S. Goreen ...	G. Poulton ...	S.	L.M. & S. Rly. ...	Fms. 911 & 138 31.1.38 to 25.5.38	2.6.38
*† *Duke of Lancaster*	E. B. Sergeant ...	W. Cole, W. N. Greenwood.	C. J. Seed ...	,,	,, ,, ...	,, ,, 14.2.38 to 19.4.38	20.4.38
*† *Duke of Rothesay*	F. C. Raven	A. E. Willmott, J. Abram, J. Irwin.	G. Pilling ...	,,	,, ,, ...	,, ,, 13.2.38 to 31.5.38	2.6.38
098 †† *Dunbar Castle*, M.S.	A. E. Castle	G. W. Laurenson, J. D. Walker	P. P. Williams...	,,	Union-Castle Mail S.S. Co., Ld.	,, ,, 12.2.38 to 10.4.38	23.4.38
*† *Dunedin Star*, M.S.	G. Owen	P. H. Hunt, J. J. Miller ...	R. W. D. Benbow	M.	Blue Star Line, Ld.	Fm. 911 18.1.38 to 20.4.38	27.4.38
193 †† *Dunnottar Castle*, M.S.	R. W. Goodacre, R.D., R.N.R.	G. E. Stephenson, J. F. Coleman.	O. Blan ...	S.	Union-Castle Mail S.S. Co. Ld.	Fms. 911 & 138 26.2.38 to 17.4.38	23.4.38
043 †† *Dunvegan Castle*, M.S.	E. H. Thornton, R.D., R.N.R.	C. W. Armstrong	F. W. Santillo...	,,	,, ,, ...	,, ,, 26.2.38 to 1.5.38	4.5.38
064 *† *Durham*, M.S. ...	C. R. Pilcher	J. A. Knott, J. F. Clement, E. Porter.	F. Shaw ...	M.	Federal S.N. Co., Ld.	,, ,, 21.12.37 to 16.4.38 Fm. 912 19.3.38 to 16.4.38	4.5.38 4.5.38
*† *Eastern Coast* ...	W. Quirk	R. E. Holt, P. A. Johnson ...	... ...	M.L.	Coast Lines, Ld.	Fm. 915 1.1.37 to 26.7.37	30.9.37
077 †† *Edinburgh Castle*	H. A. Couston ...	W. F. Palmer, D. Robertson	R. Brew ...	S.	Union-Castle Mail S.S. Co., Ld.	Fms. 911 & 138 5.2.38 to 29.5.38	31.5.38
107 *† *El Argentino*, M.S.	F. Ellis, D.S.C. ...	H. N. Sherwell, R. Rushton, H. Butler.	H. Dawson ...	M.	Furness Lines ...	,, ,, 2.4.38 to 26.5.38	28.5.38
183 †† *Empress of Australia*	C. H. Sapsworth ...	R. Newsan, J. B. Saunders, A. C. Harrison.	J. B. Butler ...	S.	Canadian Pacific Steamships, Ld.	,, ,, 2.5.38 to 3.6.38 Fm. 912 2.5.38 to 3.6.38	7.6.38 7.6.38
034 †† *Empress of Britain.*	W. G. Busk-Wood, R.D., Commr., R.N.R.	W. A. Stanley, W. S. Main, D. Dunn.	G. Potts ...	,,	,, ,,	Fms. 911 & 138 19.5.38 to 23.5.38	25.5.38
119 †† *Erin*	V. Hill	R. De Gruchy, M. N. Faichney M. W. Caws.	A. F. L. Crosby	,,	Erin S.S. Co., Ld.	,, ,, 4.3.38 to 13.5.38	17.5.38
010 *† *Eros* (t-e) ...	J. R. Matthews ...	J. T. C. Vigurs, H. Green, H. E. Lascelles.	W. Burnett ...	,,	,, ,,	,, ,, 17.2.38 to 30.4.38	6.5.38
169 *† *Essex*, M.S. ...	F. N. Wyatt	J. R. Griffiths, R. J. Olsen, N. N. Lawson.	F. W. Ward ...	M.	Federal S.N. Co., Ld.	,, ,, 23.12.38 to 28.3.38	6.5.38
*† *Ettrickbank* ...	T. Watkins	D. Campbell	... ...	S.	A. Weir & Co., Ld.	... ... 18.3.38 to 8.4.38	6.5.38
*† *Explorer* ...	D. C. Sandison ...	T. R. Ness, J. Craig ...	... ...	M.L.	Scottish Fishery Board	Fm. 915 15.6.37 to 21.12.37	29.12.37
239 *† *Foylebank*, M.S.	H. J. Smith	T. Donaldson, E. E. Thomas, J. Hart.	T. Flees... ...	S.	A. Weir & Co. ...	Fms. 911 & 138 2.1.38 to 18.4.38	4.5.38
173 †† *Franconia* ...	G. R. Dolphin, R.D., Commr., R.N.R.	E. W. Kent, J. C. Boyce, B. Harrison.	J. Harvey ...	,,	Cunard White Star, Ld.	,, ,, 6.9.37 to 24.10.37 Fm. 912 4.6.37 to 28.8.37	1.11.37 2.9.37
186 †† *Georgic*, M.S. ...	B. B. Oram, R.D., Commr., R.N.R.	N. Kingscote, R. V. Wood, R. O. Price.	A. Schofield ...	,,	,, ,,	Fms. 911 & 138 27.4.38 to 2.5.38 Fm. 912 27.4.38 to 2.5.38	6.5.38 6.5.38
234 *† *Glaucus* ...	B. T. Batho, J. P. Phillips	R. L. Cladingbowl, R. E. Wilks, L. R. Hill, E. Greenwood.	A. Dunn ...	M.L.	A. Holt & Co. ...	Fm. 915 29.7.37 to 8.11.37	29.12.37
026 *† *Glenbank*, M.S.	J. Macdonald	W. J. H. Pearce, D. S. Morrison	H. Row ...	S.	A. Weir & Co. ...	Fms. 911 & 138 8.11.37 to 1.3.38	21.3.38
*† *Guido*	A. P. Dugdale	... ...	... ...	,,	Ellerman's Wilson Line	... ...	...
218 *† *Harmonides* ...	H. Evans	T. Paxton, J. K. Gorrie, L. Scott, J. L. Jones.	N. Brewer ...	,,	Houston Line, Ld.	Fms. 911 & 138 27.12.37 to 23.5.38	1.6.38
171 *† *Hertford* ...	T. J. C. Tuckett ...	R. W. Corn, R. T. Birkin, R. G. Hollingdale.	E. Saunders ...	,,	Federal S.N. Co., Ld.	,, ,, 7.2.38 to 16.3.38	6.5.38
*† *Hibernia* ...	J. R. Bulmer, M.B.E....	W. E. Meade	D. T. Rockey ...	,,	L.M. & S. Railway	,, ,, 9.10.37 to 17.1.38	26.1.38
182 †† *Highland Brigade*, M.S.	R. G. Clayton, D.S.C., R.D., Capt., R.N.R.	J. F. F. J. Swallow, T. Fraser, A. Clarke.	E. A. Reynolds...	M.-S.	Royal Mail Lines, Ld.	,, ,, 2.3.38 to 16.4.38	21.4.38

Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Owners.	Logs, Registers, or Records Contributed. 10.3.38 to 7.6.38.	Date Last Return Received.
116 †† *Highland Chieftain*, M.S.	J. A. Hodges, R.D., R.N.R.	D. H. New, Q. Ballardee, F. A. Attenbrow.	T. Desboro ...	M.-S.	Royal Mail Lines, Ld.	Fms. 911 & 138 31.1.38 to 31.5.38	2.6.38
099 †† *Highland Monarch*, M.S.	S. Weller	W. B. Avison, R. Maton, R. Wood.	E. F. Weatherhead.	,,	,, ,, ,,	,, ,, 20.1.38 to 1.5.38	20.5.38
230 †† *Highland Patriot*, M.S.	R. H. Robinson ...	G. E. Leech, J. Green, J. Springall.	M. Carpenter ...	,,	,, ,, ,,	,, ,, 19.3.38 to 1.5.38	6.5.38
250 †† *Highland Princess*, M.S.	A. E. Cormick	H. E. Sang, H. D. Bowker, J. M. Phillips.	L. P. Thayne ...	,,	,, ,, ,,	,, ,, 15.2.38 to 3.4.38	13.4.38
* *Hopecrown*, M.S.	R. W. D. Gilbertson ...	... ...	... ...	S.	A. Stott & Co., Ld.	... ...	...
*† *Hopepeak*, M.S.	J. Hardy	R. Atkinson, J. Marshall, E. G. Painter.	W. L. Cowan ...	,,	,, ,, ,,	... ... 4.4.38 to 12.5.38	2.6.38
*† *Hopestar* ...	J. Steward	W. A. Watson	... ...	,,	,, ,, ,,	Fm. 911 4.4.38 to 9.5.38	7.6.38
178 *† *Imperial Star* M.S.	D. R. Macfarlane ...	H. H. Arton	... ...	M.	Blue Star Line, Ld.	,, 27.12.37 to 19.4.38	13.5.38
260 *† *Inanda*	W. A. Short	E. P. Simmons, J. Bean, B. H. Band.	E. J. Cook ...	,,	T. & J. Harrison	Fms. 911 & 138 27.2.38 to 30.5.38	3.6.38
*† *Inkosi*	J. T. Ling	F. G. La Hive, D. Kerr, V. Harrison	T. Fleetwood ...	M.-S.	,, ,,	,, ,, 31.1.38 to 2.5.38	13.5.38
144 *† *Inverbank*, M.S.	A. C. Loads	F. H. Cummings. L. C. Smith, J. W. Beveridge.	J. T. Jupp ...	S.	A. Weir & Co. ...	,, ,, 17.2.38 to 26.3.38	25.4.38
*† *Isle of Guernsey*	F. W. Hodges, R.D., Comdr. R.N.R.	A. Light, G. Pearce	T. Stubbs ...	,,	Southern Rly. ...	,, ,, 1.4.38 to 3.6.38	6.6.38
*† *Isle of Jersey* ...	... ...	W. F. Mason, H. Howe ...	T. D. Baron ...	,,	,, ,, ...	,, ,, 2.2.38 to 25.3.38	1.4.38
*† *Isle of Sark* ...	R. J. Large	W. J. Mason, H. Wellow, H. F. Bremely, A. Light.	A. Weselby ...	,,	,, ,, ...	,, ,, 21.2.38 to 16.5.38	17.5.38
269 *† *Ixion*	J. O'Connor	E. Jaques, A. Dobbin, C. L'Estrange.	F. Walls ...	M.L.	A. Holt & Co. ...	Fm. 915 14.9.37 to 5.12.37	7.2.38
226 *† *Javanese Prince*, M.S.	C. S. Smith	J. T. Gray, C. J. P. Martin, N. Gale.	J. A. Campbell	,,	Furness Lines ...	,, 11.12.37 to 25.3.38	13.5.38
206 *† *Karamea*, M.S....	E. T. Grayston, D.S.C., R.D., Commr., R.N.R.	W. Hill, R. L. M. Owen, Dunnett, A. Chandler.	J. M. Tuck ...	S.	Shaw Savill & Albion Co., Ld.	Fms. 911 & 138 29.1.38 to 16.5.38	23.5.38
262 *† *Kemmendine* ...	W. C. C. Plage ...	D. Meekison, P. Mcabe ...	... ...	M.	P. Henderson & Co., Ld.	,, ,, 7.2.38 to 19.5.38	25.5.38
190 *† *Kenbane Head* ...	J. R. Moore	R. J. English, J. Green, W. A. Haddock.	A. McCartney ...	S.	G. Heyn & Sons	,, ,, 11.2.38 to 27.5.38 Fm. 912 11.2.38 to 27.5.38	31.5.38 31.5.38
147 †† *Laconia* ...	W. Battle, D.S.O. ...	E. W. Kent, R. Conway, W. J. Foster.	J. N. Crabb ...	,,	Cunard White Star, Ld.	Fms. 911 & 138 27.1.38 to 22.5.38 Fm. 912 1.5.38 to 22.5.38	25.5.38 25.5.38
240 †† *Lancastria* ...	G. G. Illingsworth ...	J. T. Jones, O. V. Lucas, G. T. Kavanagh.	S. W. Brown ...	,,	,, ,, ,,	Fms. 911& 138 3.4.38 to 30.5.38 Fm. 912 3.4.38 to 30.5.38	7.6.38 7.6.38
267 *† *Lassell*, M.S. ...	W. W. Watson ...	W. R. Bevin, T. J. Sweeney, B. Green.	K. B. Fry ...	,,	Lamport & Holt Line, Ld.	Fms. 911 & 138 17.8.37 to 3.11.37	9.11.37
083 *† *Lautaro*, M.S. ...	R. C. Skellorn	A. Lang, I. G. Menzies, A. H. Turner.	P. O'Sullivan ...	M.	Pacific S.N. Co. ...	,, ,, 5.2.38 to 2.3.38	5.3.38
251 *† *Levernbank*, M.S.	H. A. Jones	A. E. Newton, J. W. Robinson G. C. Beaton.	H. S. Matheson	S.	A. Weir & Co. ...	,, ,, 11.2.38 to 26.4.38	29.4.38
093 *† *Llandaff Castle*...	S. F. Newdigate, R.D., R.N.R.	S. J. Clutterbuck, J. A. Sowdon, W. Anson.	E. H. Pitt ...	,,	Union-Castle Mail S.S. Co., Ld.	,, ,, 22.2.38 to 24.4.38	8.5.38
094 *† *Llandovery Castle*	F. E. Smyth, R.D., Commr., R.N.R.	J. Tait...	A. E. Hunter ...	,,	,, ,, ,,	,, ,, 22.1.38 to 29.3.38	7.4.38
097 †† *Llangibby Castle*, M.S.	J. C. Simpson ...	E. S. Bainbridge	Batchelor ...	,,	,, ,, ,,	,, ,, 18.3.38 to 20.5.38	23.5.38
216 *† *Llanstephan Castle*	G. E. Spradbrow ...	D. E. Smedley	E. A. Shaw ...	,,	,, ,, ,,	,, ,, 23.5.38 to 30.5.38	7.6.38
137 *† *Logician* ...	E. B. Curphey ...	W. S. Eustance, G. H. Howard, D. V. Jones.	R. McGowan ...	M.	T. & J. Harrison	,, ,, 5.12.37 to 25.2.38	3.3.38
268 *† *Loriga* M.S. ...	A. C. Taylor	A. Ecclestone, D. W. Hutchinson, A. G. Muir.	F. T. Adams ...	,,	Pacific S.N. Co. Ld.	,, ,, 27.3.38 to 28.4.38	8.5.38
008 *† *Losada*, M.S. ...	M. Armstrong, D.S.O....	J. H. Allenby...	W. J. Sillars ...	,,	,, ,, ,, ,,	,, ,, 11.3.38 to 10.4.38	20.4.38
232 *† *Madura*... ...	J. A. Wright	D. A. Jones, R. M. Haynes, K. A. Noble.	H. O. Francis ...	,,	British India S.N. Co., Ld.	,, ,, 14.3.38 to 18.5.38	31.5.38
062 *† *Mahia*	W. T. Thompson ...	D. Ashley, C. Carroll, N. Banks.	D. Macrae ...	S.	Shaw, Savill & Albion Co., Ld.	,, ,, 8.9.37 to 15.1.38	29.1.38
140 *† *Mahratta* ...	W. Hill	G. J. Nuttall, A. G. Gorham	B. Smith ...	M.	T. & J. Brocklebank, Ld.	,, ,, 17.1.38 to 8.4.38	30.4.38
014 *† *Mahronda* ...	A. Anderson	W. F. Harris, J. B. Newman, V. H. Fraebel.	W. H. Ritch ...	,,	,, ,, ,,	,, ,, 9.2.38 to 19.4.38	12.5.38
015 *† *Mahsud* ...	H. D. Fulcher... ...	P. D. McKenzie, H. Simpson, M. R. Melville.	R. Burton ...	,,	,, ,, ,,	,, ,, 5.3.38 to 1.4.38	5.4.38
018 *† *Makalla* ...	J. Greenall	H. Gillespie, P. Bathurst, H. Atherton.	J. S. Wilson ...	,,	,, ,, ,,	,, ,, 4.2.38 to 14.4.38	9.5.38
236 *† *Malayan Prince*, M.S.	W. Irvine	J. A. Reeves, A. A. Spilman, J. A. Taylor.	J. S. Sharpe ...	M.L.	Furness Lines ...	Fm. 915 17.9.37 to 27.12.37	9.3.38
195 †† *Maloja*	R. C. Dene	J. Simms, L. J. Brown, A. G. Stansfield.	A. Macbeth ...	M.-S.	P. & O. S.N. Co.	Fms. 911 & 138 9.1.38 to 13.4.38	19.4.38
009 *† *Manchester Brigade*	J. Barclay	F. L. Osborne, G. S. Jones, W. Gough.	W. H. Critchley	S.	Manchester Liners Ld.	,, ,, 15.2.38 to 13.5.38	21.5.38
060 *† *Manchester Citizen*	G. M. Mitchell ...	W. E. Quirck	J. J. Hand ...	,,	,, ,,	,, ,, 20.2.38 to 14.5.38 Fm. 912 17.4.38 to 14.5.38	18.5.38 18.5.38
179 *† *Manchester Commerce*	J. E. Riley	... ...	... ...	,,	,, ,,	... ...	...
187 *† *Manchester Division*	E. E. Bonnand ...	A. Starmer, M. E. Bewley, W. E. Todd.	L. Hooper ...	,,	,, ,,	Fms. 911 & 138 13.2.38 to 23.4.38	5.5.38
253 *† *Manchester Producer*	T. Makin	F. Downing, F. Lewis, L. A. Muir.	J. Doyle ...	,,	,, ,,	Fms. 911 & 138 7.3.38 to 18.4.38	29.4.38
197 *† *Manchester Regiment*	E. W. Raper	G. B. Harrington, R. D. Venn, E. W. Espley.	J. Snowdon ...	,,	,, ,,	,, ,, 20.3.38 to 21.5.38 Fm. 912 25.2.38 to 21.5.38	24.5.38 24.5.38
146 *† *Mandasor* ...	A. G. Dixon, R.D., Capt. R.N.R.	G. McL. Reid, J. B. Leigh, W. Spencer.	J. Duffy ...	M.	T. & J. Brocklebank, Ld.	Fms. 911 & 138 1.12.37 to 7.2.38	15.2.38
213 †† *Mashobra* ...	P. Taylor	L. E. Shiller, D. W. Shaw, H. J. Wright.	H. H. Ridgeway	M.-S.	British India S.N. Co., Ld.	,, ,, 1.3.38 to 19.5.38	26.5.38
235 †† *Mataroa* ...	W. H. Hartman ...	R. Grant, F. J. Patterson, Vaughan Campbell.	J. Carey ...	S.	Shaw, Savill & Albion Co., Ld.	,, ,, 30.1.38 to 3.3.38	9.3.38

Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Owners.	Logs, Registers, or Records Contributed. 10.3.38 to 7.6.38	Date Last Return Received.
023 *† *Matheran*	W. T. King	A. L. Austin, R. Penston, W. Couling.	J. D. Jones	M.	T. & J. Brocklebank, Ld.	Fms. 911 & 138 30.10.37 to 18.1.38	22.1.38
024 *† *Matra*	N. P. Cornish	E. L. Jones, F. Moore, G. H. Ellison.	E. R. Capps	,,	,, ,,	,, ,, 31.3.38 to 2.5.38	17.5.38
126 *† *Melmore Head*	T. M. Heddlie	R. M. Browne	P. Catkill	S.	G. Heyn & Son	,, ,, 23.2.38 to 21.4.38	29.4.38
278 *† *Middlesex*	H. J. Wilde	A. H. Martin, A. Brown, H. A. Porter.	S. H. Jones	,,	Federal S.N. Co., Ld.	,, ,, 23.11.37 to 31.12.37	3.1.38
069 †† *Montcalm*	D. Pert	E. Aikman, F. Granger, C. S. Morris.	S. Biggins	,,	Canadian Pacific Steamships, Ld.	,, ,, 10.4.38 to 27.5.38 Fm. 912 10.4.38 to 29.5.38	31.5.38 31.5.38
149 †† *Montclare*	W. S. Brown	B. Charles R. McKillop, W. J. Roberts.	H. A. Bowman	,,	,, ,,	Fms. 911 & 138 20.2.38 to 18.5.38 Fm. 912 18.2.38 to 13.3.38	28.5.38 15.3.38
150 †† *Montrose*	H. J. Ferguson, D.S.C.	C S. Morris,	H. G. Warren	,,	,, ,,	Fms. 911 & 138 6.3.38 to 22.4.38 Fm. 912 6.3.38 to 22.4.38	25.4.38 25.4.38
164 †† *Mooltan*	C. M. Roche	R. B. Webster, W. H. C. Wood-Roe, T. A. Sergeant.	H. Williamson	M.-S.	P. & O. S.N. Co.	Fms. 911 & 138 14.11.37 to 17.2.38	22.2.38
196 *† *Mulbera*	W. A. Grant-Pyves	J. L. Richardson	J. O. Heatley	,,	British India S.N. Co., Ld.	,, ,, 28.3.38 to 28.4.38	23.5.38
078 *† *Myrtlebank*, M.S.	C. S. Holbrook	C. R. Eaddy, T. H. Welton, L. Wise.	A. W. Mosley	S.	A. Weir & Co.	,, ,, 18.1.38 to 14.4.38	20.4.38
203 †† *Naldera*	E. P. Parfit	...	...	M.-S.	P. & O. S.N. Co.	...	...
227 *† *Nardana*	C. E. Dorkin-White	T. Braidwood, H. Goater, H. J. Wright.	S. V. Knight	M.	Co., Ld. British India S.N. Co., Ld.	Fms. 911 & 138 10.10.37 to 16.2.38	2.3.38
202 †† *Narkunda*	W. D. C. Smith	W. N. Eade, M. R. Prouse, W. R. M. Alexander.	C. W. Herbet	M.-S.	P. & O. S.N. Co.	,, ,, 5.2.38 to 8.5.38	13.5.38
†† *Nascopie*	T. F. Smellie	T. N. Stanley	...	S.	Hudson's Bay Co.	Fm. 911 11.7.37 to 27.9.37	16.10.37
162 *† *Nestor*	J. J. Power	J. F. Fuller	J. A. Nightingale	S.	A. Holt & Co.	Fms. 911 & 138 27.1.38 to 27.4.38	3.5.38
154 *† *Newfoundland*	J. W. Murphy	C. H. Kenyon., C. H. Robinson, R. Crangle.	J. O'Regan	,,	Furness Lines	,, ,, 11.3.38 to 16.5.38 Fm. 912 18.3.38 to 16.5.38	18.5.38 18.5.38
102 *† *New Zealand Star*, M.S.	J. B. Hall	J. J. Dickson, J. H. Mortimer, G. R. Whitelaw.	J. A. Bradley	M.	Blue Star Line, Ld.	Fms. 911 & 138 25.11.37 to 5.3.38	11.3.38
*† *Northern Coast*	H. Cameron	A. A. Duncan, G. Wilkinson	...	M.L.	Coast Lines, Ld.	Fm. 915 23.11.37 to 4.4.38	12.4.38
181 *† *Nova Scotia*	T. Webber	W. Lutyens, J. Warren, V. V. Davies.	W. Brock	S.	Furness Lines	Fms. 911 & 138 18.2.38 to 1.6.38 Fm. 912 18.2.38 to 17.5.38	6.6.38 3.6.38
243 *† *Opawa*, M.S.	F. S. Hamilton	T. B. S. Moncrief, F. E. Mitchell, N. A. Thomas.	H. W. Jackson	M.	New Zealand Shipping Co., Ld.	Fms. 911 & 138 26.1.38 to 12.5.38	1.6.38
172 †† *Orama*	H. J. Sarson	W. H. Barker, P. G. A. King, R. S. Mortimer.	M. W. Helman	S.	Orient S.N. Co., Ld.	,, ,, 14.2.38 to 17.4.38	26.5.38
080 *† *Orari*, M.S.	J. G. Almond	H. H. Mackillican, E. Hutchinson, R. Solomby.	A. Stenning	M.	New Zealand Shipping Co., Ld.	,, ,, 17.10.37 to 3.2.38	9.2.38
246 *† *Orbita*	E. H. Large, O.B.E., R.D., R.N.R.	J. Williams, W. H. Bowen, J. E. Evans.	D. H. Sinclair	M.-S.	Pacific S.N. Co.	,, ,, 25.1.38 to 31.3.38	12.4.38
087 *† *Orduna*	H. B. Reece	E. C. Hicks, T. J. Naylor, R. Sharp.	W. G. Sutherland	,,	,, ,,	,, ,, 14.2.38 to 23.4.38	27.4.38
081 †† *Orcades*	F. R. O'Sullevan	J. C. Stratford, R. J. Brittain, E. B. Rhead.	T. Edwards	,,	Orient S.N. Co.	,, ,, 31.1.38 to 3.5.38	11.5.38
148 †† *Orford*	E. P. Cameron, R.D., R.N.R.	G. R. Grandage, R. J. Craddock, J. E. Perviss.	J. Macdonald	,,	,, ,,	,, ,, 28.2.38 to 31.5.38	7.6.38
019 †† *Orion*	A. L. Owens, R.D., Capt. R.N.R.	F. R. F. Wilson, F. K. Manley, E. W. Tucker.	N. A. Boon	,,	,, ,,	,, ,, 3.1.38 to 2.4.38	14.4.38
174 †† *Ormonde*	A. E. Nicholls	T. S. Hardy, L. Sly, E. Charlton, A. C. Hawker.	C. F. Seaton	S.	,, ,,	,, ,, 20.12.37 to 8.3.38	22.3.38
055 †† *Oronsay*	Sir C. G. Matheson, D.S.O., R.D., Commodore, R.N.R.	N. W. Smith, E. N. Mackay, C. Edgecombe	P. T. Darby	,,	,, ,,	,, ,, 20.12.37 to 22.3.38	24.3.38
085 †† *Orontes*	G. G. Thorne, R.D., Capt., R.N.R.	R. W. Roberts, J. Williams, S. B. Hickman.	M. J. Murphy	M.-S.	,, ,,	,, ,, 18.1.38 to 19.4.38	23.4.38
095 *† *Oropesa*	R. E. Dunn, O.B.E.	G. Gerrety, R. H. Sissons, H. Cardley.	G. Penketh	M.	Pacific S.N. Co.	,, ,, 26.4.38 to 12.5.38	17.5.38
*† *Otaio*, M.S.	H. J. Wilde	J. Paterson	...	M.	New Zealand Shipping Co., Ld.	...	...
156 †† *Otranto*	L. V. James, D.S.C.	J. D. Kirkwood, W. J. Rice, P. Sargeant.	...	M.-S.	Orient S.N. Co.	Fms. 911 & 138 21.1.38 to 22.2.38	25.2.38
070 *† *Oxfordshire*	P. S. Cooper	G. W. Dobson, A. Thomson, I. D. Minto	F. Bardy	S.	Bibby Bros. & Co.	,, ,, 13.2.38 to 20.4.38	23.4.38
044 *† *Pacific Exporter*, M.S.	H. Reavley	H. G. B. Moss, W. Edmonds, S. Lavis.	A. W. Hearnden	,,	Furness Lines	,, ,, 27.10.37 to 19.1.38	25.1.38
*† *Paris*	C. G. G. Munton	E. W. Smith	C. Kelley	,,	Southern Rly.	,, ,, 1.3.38 to 30.5.38	1.6.38
128 *† *Port Auckland*	C. A. Robinson	T. A. Sutton, J. G. Thorn, E. N. Howard	N. A. Rutter	,,	Port Line, Ld.	,, ,, 6.1.38 to 2.5.38 Fm. 912 25.1.38 to 12.2.38	7.5.38 28.3.38
131 *† *Port Darwin*	T. H. Rigden	J. L. Porter, P. Stansbury, J. M. Hay.	A. S. Bassi	,,	,, ,, ,,	Fms. 911 & 138 26.2.38 to 5.4.38	13.4.38
*† *Port Dunedin*	A. H. Brown	...	...	,,	,, ,, ,,	...	...
163 *† *Port Gisborne*, M.S.	W. G. Higgs	T. B. Milburn, H. Clinch, H. G. Chesterman.	E. Mooney	,,	,, ,, ,,	Fms. 911 & 138 28.10.37 to 16.2.38 Fm. 912 14.1.38 to 26.1.38	23.2.38 23.2.38
124 *† *Port Jackson*, M.S.	S. W. Hayter	F. J. Lavers, E. W. Dingle, R. Finch	P. M. Edwards	,,	,, ,, ,,	Fms. 911 & 138 5.12.37 to 19.3.38	5.4.38

Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Owners.	Logs, Registers, or Records Contributed. 10.3.38 to 7.6.38.	Date Last Return Received.
177 *† *Port Wellington*	H. Jeffrey	K. D. Morgan, R. G. Russell, R. A. Wight.	R. D. Waterhouse	S.	Port Line Ld. ...	Fms. 911 & 138 11.9.37 to 27.1.38	1.2.38
003 *† *Port Wyndham*, M.S.	W. Gilling	L. B. Philpott, N. Pealing, A. J. Knell, E. G. Jones.	R. Colbourne ...	,,	,, ,, ,,	,, ,, 9.12.37 to 30.3.38 Fm. 912 1.3.38 to 1.4.38	4.4.38 4.4.38
*† *Prague*	C. Baxter	F. Woods, R. H. Wright ...	A. C. Potter ...	,,	L. & N.E. Rly. ...	Fms. 911 & 138 7.3.38 to 30.5.38	2.6.38
063 *† *Queen City* ...	J. C. Cornwell	D. Williams, K. Germany, C. S. Whitticombe.	Constable ...	,,	Sir Wm. Reardon Smith & Partners, Ld.	,, ,, 3.4.38 to 13.4.38	1.6.38
263 †† *Queen Mary* ...	R. B. Irving, O.B.E., R.D., Capt., R.N.R.	B. L. Butcher, H. Clarke, E. A. Divers.	A. L. Thorp ...	,,	Cunard White Star, Ld.	,, ,, 3.3.38 to 29.5.38 Fm. 912 17.3.38 to 16.5.38	1.6.38 17.5.38
165 *† *Radnorshire*, M.S.	T. G. Maison	T. R. Walker, J. Fry, D. D. McIntosh.	I. T. Davies ...	,,	A. Holt & Co. ...	Fms. 911 & 138 3.1.38 to 26.4.38	5.5.38
205 †† *Rajputana* ...	W. A. Cotching ...	J. D. Green, A. R. E. Bishop, M. F. Shute.	J. A. Skinner ...	M.-S.	P. & O. S.N. Co.	,, ,, 13.2.38 to 21.4.38	28.4.38
228 †† *Ranchi*	J. A. Smith	G. M. Farmiloe, J. P. MacArthur.	W. Stevenson ...	,,	,, ,, ,	,, ,, 27.2.38 to 7.4.38	9.4.38
224 †† *Rangitane*, M.S.	A. W. McKellar, R.D., Capt., R.N.R.	H. J. Brownings, J. R. Vincent, F. W. Newman.	N. J. Hallet ...	,,	New Zealand Shipping Co., Ld.	,, ,, 14.11.37 to 19.2.38	2.3.38
217 †† *Rangitata*, M.S.	E. Holland	R. A. Belfield, A. McD. Hannah, S. Andrews.	H. R. Dedman	,,	,, ,, ,,	,, ,, 17.10.37 to 22.1.38	27.1.38
105 †† *Rangitiki*, M.S.	H. Barnett	H. C. R. Dell, I. B. Rose, L. W. Fulcher.	L. Horn ...	,,	,, ,, ,,	,, ,, 9.1.38 to 12.4.38	3.5.38
207 †† *Ranpura* ...	J. M. Legg	A. W. Richardson, G. L. F. Melville, G. Randall.	J. R. C. Johnson	,,	P. & O. S.N. Co.	,, ,, 13.2.38 to 18.5.38	23.5.38
071 †† *Rawalpindi* ...	M. G. Draper, R.D., Commr., R.N.R.	L. A. Hill, A. P. Godfrey, W. B. Vickers.	S. W. Sharp ...	,,	,, ,, ,,	,, ,, 27.2.38 to 3.6.38	6.6.38
247 *† *Recorder* ...	W. Baird	L. Seddon, G. H. Jolly, J. Downing.	T. G. Jones ...	M.	T. & J. Harrison	,, ,, 14.2.38 to 28.4.38	2.5.38
132 *† *Reina del Pacifico*, M.S.	A. Ridyard, O.B.E. ...	H. Matthews, G. H. Rice J. P. Edwards.	J. B. Stone ...	,,	Pacific S.N. Co. ...	,, ,, 16.1.38 to 25.3.38	30.3.38
276 †† *Remuera* ...	E. B. Lamb	R. S. Warren, F. J. Jones, J. P. Fyfe.	J. B. Stockman	S.	New Zealand Shipping Co., Ld.	,, ,, 18.12.37 to 25.3.38	7.4.38
*† *Robert F. Hand* (tank).	J. A. Collie	F. J. Hewitt, G. Robson ...	... ...	,,	Anglo - American Oil Co., Ld.	,, ,, 7.2.38 to 16.4.38	22.4.38
*† *Rockflower* S.T.	L. D. Romyn	L. D. Romyn	M. McKimmon	,,	Yorkshire Steam Fishing Co., Ld.	,, ,, 4.3.38 to 18.5.38 Fm. 912 7.3.38 to 27.5.38	2.6.38 30.5.38
032 *† *Rotorua* ...	A. E. Lettington, D.S.C.	R. H. Chapman, R. J. West, A. P. Allingham.	E. G. Stride ...	M.	New Zealand Shipping Co., Ld.	Fm. 911 25.10.37 to 3.3.38	25.3.38
*† *Royal Sceptre* ...	J. L. Williams ...	C. P. Bridgewood	... ...	S.	Hall Bros. ...	,, ,, 9.1.38 to 1.4.38	8.4.38
231 *† *Ruahine* ...	G. Kinnell	J. E. Clarke, C. W. Roberts, J. A. Matthews.	... ...	,,	New Zealand Shipping Co., Ld.	Fm. 911 28.2.37 to 13.6.37	22.7.37
*† *St. Cathan*, S.T.	J. H. Ellis	J. H. Ellis	M. E. Sandell ...	,,	Thos. Hamling & Co. Ld.	Fms. 911 & 138 4.3.38 to 17.5.38 Fm. 912 4.3.38 to 4.4.38	20.5.38 6.4.38
*† *St. Helier* ...	R. Pitman	F. E. Martin	E. Trapnell ...	,,	G.W. Railway ...	Fms. 911 & 138 1.2.38 to 31.3.38	4.4.38
*† *St. Julien* ...	L. Richardson	T. D. Thomas, F. E. Martin	E. Trapnell ...	,,	,, ,,	,, ,, 3.5.38 to 31.5.38	3.6.38
*† *St Patrick* ...	H. C. Bond	T. D. Thomas	L. M. Wilmott	,	,, ,,	,, ,, 1.6.37 to 12.8.37	4.9.37
100 †† *Samaria* ...	J. McRostie	S. W. Howell, H. Hudson, A. Thompson.	R. A. J. Owlett	,,	Cunard White Star, Ld.	,, ,, 28.2.38 to 29.5.38 Fm. 912 2.4.38 to 14.5.38	1.6.38 24.5.38
*† *San Adolfo*, M.S. (tank)	R. Johnston	A. Skinner	A. Julius ...	M.-S.	Eagle Oil & Shipping Co., Ld.	Fm. 911 18.2.38 to 7.5.38	14.5.38
108 *† *San Alberto*, M.S. (tank)	C. Vidot	H. Shotton, J. Shaw, W. Goebel.	R. S. Evans ...	M.	,, ,,	Fms. 911 & 138 16.3.38 to 1.5.38	9.5.38
*† *San Alvaro*, M.S. (tank)	F. A. Kennett	H. Harrington, R. M. Atkinson.	D. Brodie ...	M.-S.	,, ,,	Fm. 911 29.1.38 to 21.3.38	9.5.38
073 *† *San Arcadio*, M.S. (tank)	S. Perry	M. A. Connel, J. S. Burgess, A. P. Shaw.	W. R. Cameron	M.	,, ,,	Fms. 911 & 138 16.2.38 to 8.5.38	17.5.38
159 *† *San Casimiro* M.S. (tank)	H. Paterson	C. H. Emmerson	... ...	,,	,, ,,	,, ,, 15.3.38 to 26.5.38	6.6.38
*† *San Cirilo* ...	A. Riddel, R.D., Capt., R.N.R.	E. Dellow	... ...	,,	,, ,,	Fm. 911 4.2.38 to 27.4.38	2.5.38
*† *Scotia*	A. W. Bateman ...	N. Lloyd Williams	J. H. Rockey ...	S.	L.M. & S. Railway	Fms. 911 & 138 13.12.37 to 19.3.38	29.3.38
170 †† *Scythia*	J. G. Bisset, R.D., R.N.R.	P. A. Read, R. E. Patchett, R. G. Roberts.	A. F. Porter ...	,,	Cunard White Star, Ld.	,, ,, 14.3.38 to 5.6.38 Fm. 912 14.3.38 to 5.6.38	7.6.38 7.6.38
211 *† *Shropshire*, M.S.	R. S. Evans, O.B.E. ...	A. E. Young, A. E. Evans, G. Washington.	G. C. Talbot ...	,,	Bibby Bros. & Co.	Fms. 911 & 138 17.1.38 to 23.3.38	29.3.38
121 *† *Siamese Prince*, M.S.	E. Hardcastle	R. Jones, E. A. Parfitt, C. Blakey, G. Lindsay.	A. Frazer ...	M.L.	Furness Lines ...	Fm. 915 18.8.37 to 10.12.37	7.2.38
*† *Silversandal* ...	J. Harrison Leask ...	R. W. Cherry, A. Boniwell, T. H. Whiston.	H. Williams ...	,,	S. & J. Thompson, Ld.	,, 27.9.37 to 13.2.38	9.4.38
*† *Silverwalnut*, M.S.	J. Smith	H. J. Pursey, J. Eccleston, C. U. S. Butlers.	D. H. Walker	,,	,, ,,	Fm. 915 23.8.37 to 14.12.37	7.2.38
141 *† *Somerset* ...	N. Rice	H. Hill, C. C. Wilson, O. Thomas.	A. G. Peeling ...	S.	Federal S.N. Co., Ld.	Fms. 911 & 138 27.12.37 to 22.4.38	16.5.38
052 *† *Spero*	W. A. Dossor	W. S. Hepton, J. R. Atkinson.	B. R. Davy ...	,,	Ellerman's Wilson Line, Ld.	,, ,, 4.3.38 to 5.6.38	7.6.38
176 *† *Staffordshire*, M.S.	W. Logan Foster ...	A. A. Mackenzie, H. J. Inman, C. R. Lovell.	F. G. Blinco ...	,,	Bibby Bros. & Co.	Fm. 911 30.1.38 to 6.4.38	19.4.38
134 †† *Stirling Castle*, M.S.	H. R. Northwood ...	P. H. Grieves	G. Scurr ...	,,	Union-Castle Mail S.S. Co., Ld.	Fms. 911 & 138 16.1.38 to 5.5.38	9.5.38
020 *† *Stirlingshire*, M.S.	A. Mackinlay	G. Bowen, R. L. Smallbone, A. Hawkins.	L. Read ...	,,	Turnbull, Martin & Co., Ld.	,, ,, 4.2.38 to 18.4.38	26.4.38
047 *† *Stockport* ...	H. S. Brown	H. S. Brown, T. Fea, Storey,	D. Hawkins ...	,,	L. & N.E. Rly ...	,, ,, 23.12.37 to 8.5.38	10.5.38
270 †† *Strathaird* (t-e)...	J. M. M. Tickell ...	G. R. Peters, H. F. D. Bush, M. Kent.	A. Morris ...	,,	P. & O. S.N. Co.	,, ,, 19.2.38 to 26.5.38	7.6.38
210 †† *Strathallan* ...	J. H. Biggs, R.D., Commr., R.N.R. ...	... ...	... ...	M.-S.	,, ,, ,,	... ...	...
238 †† *Stratheden* ...	R. Harrison, D.S.O., R.D., R.N.R.	C. V. Legassick, C. C. Gardner, A. D. Seabrooke.	H. S. Horne ...	,,	,, ,, ,,	Fms. 911 & 138 25.1.38 to 15.5.38	17.5.38
277 †† *Strathmore* ...	F. E. French	K. S. Kerridge, S. O. Divers, R. A. Perry.	S. W. Mitchell ...	,,	,, ,, ,,	,, ,, 22.1.38 to 28.5.38	31.5.38
059 †† *Strathnaver* (t-e)	E. P. Lyndon, R.D., Lt.-Commr., R.N.R.	B. H. G. Rind, N. W. Leach, E. R. Rose.	P. R. Hobbs ...	,,	,, ,, ,,	,, ,, 12.12.37 to 30.4.38	3.5.38
229 *† *Tactician* ...	A. L. Peterkin ...	L. Harriman, R. Myles, R. H. Morris.	J. Hine ...	M.	T. &. J. Harrison	,, ,, 28.2.38 to 11.5.38	16.5.38
*† *Talthybius* ...	B. R. Stewart	... ...	... ...	M.L.	A. Holt & Co. ...	... ...	...
021 †† *Tamaroa* ...	W. Dawson	G. A. Simmers, G. Hawley, O. Moseley.	P. Maloney ...	M.-S.	Shaw Savill & Albion Co., Ld.	Fms. 911 & 138 19.2.38 to 30.5.38	3.6.38

Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Owners.	Logs, Registers, or Records Contributed. 10.3.38 to 7.6.38.	Date Last Return Received.
048 †† *Themistocles* ...	C. Wood, D.S.C. ...	R. F. Hamilton, J. H. Lindhardt, J. K. Downs.	V. Murphy ...	M.-S.	Shaw, Savill & Albion Co., Ld.	Fms. 911 & 138 13.12.37 to 11.4.38	19.4.38
*† *Thistleglen* ...	G. A. Whitfield, O.B.E.	L. H. Williams, G. Dobson, R. S. Collins.	A. D. Sinclair ...	M.	Allan, Black & Co.	Fm. 911 21.2.38 to 8.4.38	16.5.38
161 *† *Titan*	P. J. Pycraft	V. M. Ragg, F. Gray, N. Willis	H. James ...	S.	A. Holt & Co. ...	Fms. 911 & 138 4.1.38 to 4.3.38	13.4.38
242 *† *Tongariro* ...	P. B. Clarke, D.S.C. ...	J. S. Hough, N .A. Thomas, N. W. Piercy.	J. F. McNeill ...	,,	New Zealand Shipping Co., Ld.	,, ,, 1.1.38 to 4.2.38	2.3.38
Torcello ...	A. Hinchliff	H. Grunnill	... ...	M.L.	Ellerman's Wilson Line, Ld.	Fm. 915 15.6.37 to 21.12.37	29.12.37
025 †† *Transylvania* ...	D. W. Bone	R. L. Robertson, A. Colquhoun, H. Brown.	J. McDonald ...	S.	Anchor Line, Ld.	Fms. 911 & 138 28.4.38 to 5.5.38 Fm. 912 6.6.37 to 21.8.37	29.5.38 24.8.37
*† *Trentino* ...	J. W. Grunston ...	... ...	... ...	,,	Ellerman's Wilson Line, Ld.	... ...	...
104 †† *Tuscania* ...	J. B. Caithness ...	W. Miller, H. B. Martin, H. Russel.	J. Harvey ...	,,	Anchor Line, Ld.	Fms. 911 & 138 15.5.38 to 2.6.38	7.6.38
221 †† *Tynefield*, M.S. (tank)	L. B. Carr	T. Mallom, J. W. Murray, H. P. Mclusky.	G. Binch ...	,,	Hunting & Son, Ld.	,, ,, 24.2.38 to 8.5.38	16.5.38
088 *† *Vandyck* ...	P. Symons	D. D. Woods, R. L. Callaghan	N. J. Ryan ...	,,	Lamport & Holt, Ld.	,, ,, 15.4.38 to 26.5.38	1.6.38
079 †† *Viceroy of India* (t-e)	E. A. S. W. Carter, R.D., R.N.R.	W. H. Waghorn, H. Tee, F. J. Horton.	J. R. S. Kidson	M.-S.	P. & O. S.N. Co.	,, ,, 19.2.38 to 29.5.38	31.5.38
*† *Vienna*	H. Pickering	D. A. Williams, R. Greenfield	S. Tay	S.	L. & N.E. Rly. ...	,, ,, 2.3.38 to 28.4.38	3.5.38
112 *† *Voltaire* ...	V. E. Gore-Hickman ...	E. W. Hardie, W. R. Bevin, N. L. Knight.	W. Burnett ...	,,	Lamport & Holt	,, ,, 16.4.38 to 30.5.38	2.6.38
004 †† *Waipawa*, M.S.	J. W. Johnson ...	R. A. Barns, G. Connelly, G. Houchen.	B. A. Long ...	,,	Shaw, Savill & Albion Co., Ld.	,, ,, 24.2.38 to 21.3.38	25.4.38
254 †† *Wairangi*, M.S.	H. R. Gordon	I. Collins, E. Sainsbury, I. Wildsmith.	E. W. Simmons	,,	,, ,, ,,	,, ,, 29.1.38 to 28.2.38	3.3.38
212 †† *Waiwera*. M.S.	W. C. Meek	M. S. Newton, R. G. James, A. M. Whiteford.	A. H. Coxhead	,,	,, ,, ,,	,, ,, 2.3.38 to 31.3.38	5.4.38
056 *† *Westmoreland* ...	J. H. Oxnard	J. M. Taylor, R. C. Robinson, B. H. C. Crowshurst.	J. G. C. T. Barry-Cowcrow.	,,	New Zealand Shipping Co., Ld.	,, ,, 8.3.38 to 12.4.38	28.5.38
005 †† *Windsor Castle*...	Basil Ray	H. C. Ford	G. Lewis ...	,,	Union-Castle Mail S.S. Co., Ld.	,, ,, 29.1.38 to 19.5.38	21.5.38
053 *† *Worcestershire*, M.S.	R. P. Mann	T. H. Lowe, J. McAuseland, H. Kerbyson.	J. Tyson ...	,,	Bibby Bros. & Co.	,, ,, 28.2.38 to 4.5.38	10.5.38
*† *Worthing* ...	B. Shaw	H. Smith	A. Sheppard ...	,,	Southern Railway	,, ,, 9.2.38 to 14.5.38	31.5.38
244 *† *Yoma*	W. Lusk	W. C. Wilson, G. D. Barr, J. E. Bury.	R. W. Wilson ...	M.	P. Henderson & Co.	,, ,, 8.1.38 to 22.3.38	6.4.38
012 *† *Yorkshire* ...	V. C. P. Smalley ...	H. Davies, G. Neggit, C. H. Sheldrake.	R. C. Wilde ...	S.	Bibby Bros. & Co.	,, ,, 28.3.38 to 1.6.38	7.6.38
Conway, H.M.S.	T. M. Goddard, Commr., R.N.R.	The Senior Cadets	... ...	Cadets M.L.	... ...	Cadets Met. Log. 16.1.38 to 27.3.38	6.4.38
Pangbourne Nautical College.	A. B. Greig, O.B.E., D.S.C., Capt., R.N.	,, ,, ...	... ...	,,	... ...	,, ,, 23.1.38 to 3.4.38	8.4.38
Worcester, H.M.S.	G. C. Steele, V.C., Commr., R.N.	,, ,, ...	... ...	,,	... ...	,, ,, 15.1.38 to 7.4.38	12.4.38
Watling Island	... ...	The Keepers	... ...	Lighthouse Register	... ...	Lighthouse Register 1.1.37 to 10.7.37	27.9.37
Cape Pembroke... (Falkland Is.)	... ...	,, ,, ...	... ...	,,	... ...	,, ,, 1.7.37 to 31.12.37	9.2.38

SHIPS WATER SAMPLING THE NORTH ATLANTIC. FISHERIES LABORATORY, LOWESTOFT.

Name of Vessel.	Captain.	Observing Officer.	Owners.	Received at Government Chemist, London.
Atlantian	E. W. Jones	A. E. Rogers	T. & J. Harrison	30 Water Samples, —.6.38
Dakarian	A. D. Brown	W. P. Baker	,, ,, ...	30 ,, ,, 4.5.38
Darian	W. Rowberry	R. F. Hart	,, ,, ...	30 ,, ,, 4.5.38
Daytonian	J. M. Crowley	S. Richardson	,, ,, ...	30 ,, ,, 15.3.38
Hilary	L. Evans	H. Sapsworth	Booth S.S. Co. Ld.	60 ,, ,, 4.4.38

PUBLISHED BY THE AUTHORITY OF THE METEOROLOGICAL COMMITTEE

MARINE METEOROLOGY.

ATLASES :—

ATLANTIC (NORTH) :—

Atlas of Currents on the Main Trade Routes of the North Atlantic. (No. 323, 1930.) 6*s*. 6*d*. (29¼ × 19½ in.)

BAFFIN BAY AND DAVIS STRAIT :—

Monthly Meteorological Charts of Baffin Bay and Davis Strait. (No. 221, 1917.) 8*s*. (30 × 25½ in.)

INDIAN OCEAN :—

Indian Ocean Currents. (No. 392, 1936.) 10*s*. (30 × 20 in.)

RED SEA :—

Meteorological Charts of the Red Sea. (No. 106, 1895.) 21*s*. (22 × 13½ in.)

SOUTHERN OCEAN :—

Meteorological Charts of the Southern Ocean between the Cape of Good Hope and New Zealand. (No. 123, 1917.) 7*s*. 6*d*. (12½ × 9½ in.)

BOOKS :—

A Handbook of Weather, Currents and Ice, for Seamen. (No. 379, 1935.) 4*s*. (8vo.)

The Marine Observer's Handbook. Sixth Edition. (No. 218, 1937.) 3*s*. (8vo.)

Decode for use with the International Code for Wireless Weather Messages from Ships, with notes for the guidance of masters of British ships for making Weather Reports. Fifth Edition. (No. 329, 1938.) 6*d*. (8vo.)

JOURNAL :—

The Marine Observer.

The quarterly review of the Marine Division of the Meteorological Office in co-operation with Voluntary Marine Observers; with monthly supplements.

Deals with Weather, Climate, Currents and Ice as they are met in daily life at sea :—

Quarterly numbers 4*s*. net, 3*d*. postage; Monthly Supplements 6*d*. each net, 1*d*. postage.

Annual Subscription (including Supplements) 21*s*., post free. Cover for Volume 2*s*. net, 4*d*. postage.

The Publications in this list can be purchased directly from
H.M. STATIONERY OFFICE at the following addresses :—
Adastral House, Kingsway, London, W.C.2; 120 George Street, Edinburgh 2; 26 York Street, Manchester 1;
1 St. Andrew's Crescent, Cardiff; 80 Chichester Street, Belfast;
or through any bookseller

Printed under the authority of His Majesty's Stationery Office
By Eyre and Spottiswoode Limited, London

(375)18244(17789) Wt 19—20 925 + 300 6/38 (Item 6)

MARINE METEOROLOGY

Books Published by the Authority of the Meteorological Committee,
Air Ministry, London

A HANDBOOK OF WEATHER, CURRENTS AND ICE, FOR SEAMEN

Published on 1st March, 1935

THIS book has been recently written by the Marine Superintendent of the Meteorological Office to replace obsolete text books.

It is intended mainly for the great majority of the navigating officers of the merchant navy who do not receive information regularly through the medium of the "Marine Observer."

In this small volume, in language simple to seamen, is compressed as much of the information as is most desirable for seamen, that can be now given with confidence.

About the air and the sea, the wind systems of the oceans, tropical revolving storms and rules for handling ships in them; weather in middle and high latitudes, and how to forecast it; the currents of the oceans; floating ice, that obstacle harder than salt water which has been responsible for the end of many a fine ship, with a chapter upon modern ocean pilotage. An appendix gives the necessary Tables for reducing the barometer readings to the standard datum, and the international scales and notations for use at sea.

Marginal notes for ready reference are given throughout the book, with a good index, and there are 34 illustrations.

(*M.O.* 379.) 4*s.* (4*s.* 4*d.*)

DECODE for use with the INTERNATIONAL CODE for WIRELESS WEATHER MESSAGES FROM SHIPS

4th Edition. Revised to 1st October, 1936

NOW includes a fuller description of the Selected Ship system, schedule for communication, tables for coding and decoding weather reports, and notes for the guidance of the masters of British ships which are not Selected Ships.

This pamphlet has been recommended to the owners of all ships fitted with W.T., registered in Great Britain and Northern Ireland.

With it, reports made by Selected Ships of all nations may be decoded.

(*M.O.* 329.) 6*d* (7*d.*)

MARINE OBSERVER'S HANDBOOK

6th Edition. December, 1936.

This book has been rewritten as a companion to "A Handbook of Weather, Currents and Ice for Seamen," and also as a guide to the Voluntary System of Marine Meteorological Observation of the British Meteorological Office.

(M.O. 218.) 3*s.* (3*s.* 5*d.*)

All prices are net, those in brackets include postage.

Obtainable from

HIS MAJESTY'S STATIONERY OFFICE

LONDON, W.C.2: Adastral House, Kingsway
EDINBURGH 2: 120 George Street
MANCHESTER 1: 26 York Street
CARDIFF: 1 St. Andrew's Crescent
BELFAST: 80 Chichester Street
Or through any bookseller

S.O. Code No. 40-38-7-38